



# COAL AGE



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No. 2

## A Personal Inventory

ONCE A YEAR or once in six months we take an inventory. We enter plant, equipment, supplies, etc. We deduct expenses, debts and depreciation. We endeavor to miss no asset or liability.

If our latest balance sheet shows that our credits are not growing, we decide there is something wrong with our methods, and we seek a remedy.

That's all very well and just as it should be; but—

How about taking a personal inventory?

How much of good-will have we been able to secure in the last six months? It is a valuable asset.

How much of co-operation? It is a resource.

Have we earned the respect and fidelity of our men? Do they support us?

How much of ill-will have we aroused? It is a liability.

How much of antagonism? It is a definite loss.

If we have earned the contempt and ill-will of our employees, there is something wrong with our methods. If our personal

debts are growing faster than our personal credit, we need to adopt another system.

In the routine of business we of course acknowledge such things as checks sent us to pay for cars of coal, but do we acknowledge and show appreciation for the many little expressions of loyalty and faithful service on the part of employees? Without loyalty and efficient service we won't have cars of coal to sell.

We pay good money for advertising to promote confidence and increase trade. Do we deal frankly and openly with our men to secure the confidence which must precede honest, efficient and cheerful service?

We fill all our contracts with dealers to the letter. Has our treatment of the lowly trapper-boy been just as square?

A small item? So is postage, but we can't run our business without postage stamps.

The next time we inspect our plant let us take a look at ourselves. Perhaps we can find a way—quite simple and often overlooked—whereby we can improve the morale of our working organization.

# Economics of the Central Station in Coal Mining

By T. R. HAY\*

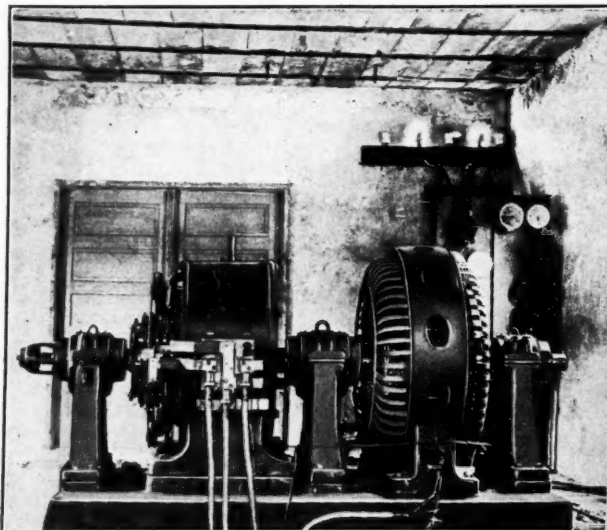
**SYNOPSIS**—Coal operators in the majority of cases do not know what their power costs or should cost. Consequently they regard central-station service with an indifference which may be dispelled only by the submission of a proposition for current. The preparation of a power contract usually reveals conditions and practices previously unsuspected.

Coal operators are finding it increasingly imperative to reduce the cost of mining and are consequently seeking ways and means of accomplishing this result. The labor cost of coal production is increasing, and consequently operators are investigating other items entering into the ex-

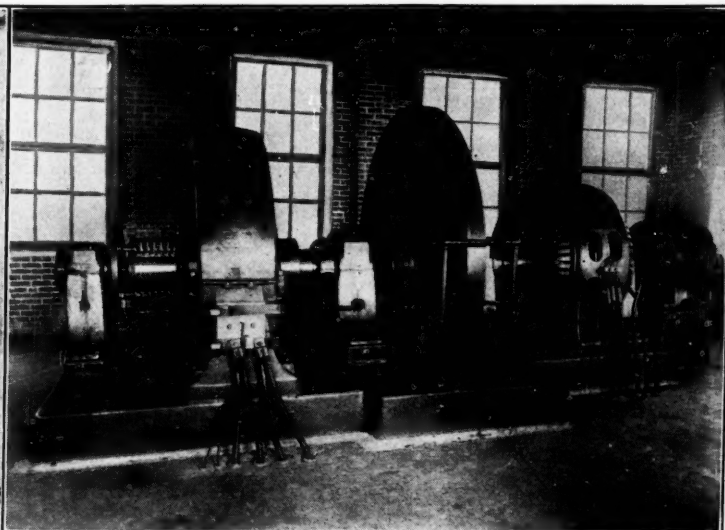
As a general rule accurate and complete cost records are not available at mines, and until something goes wrong the power plant is usually regarded as the least important part of the operation. When the subject of central-station power is first broached the general attitude of coal operators is one of indifference, and this feeling can be overcome only by the submission of data based on actual operating tests. This if properly arranged will usually act as a challenge to the operator to disprove the conclusion reached.

## UNSUSPECTED CONDITIONS WILL PROBABLY BE FOUND

The collection of this data will usually reveal conditions before unsuspected and will lead to a study of power-application of great benefit to the coal operator.



A 150-KW. WESTINGHOUSE THREE-BEARING MOTOR-GENERATOR SET



AN ALLIS-CHALMERS FLYWHEEL MOTOR-GENERATOR SET

pense of coal production and analyzing them, with the view to discovering possible leakage.

The average coal producer believes that he is securing his power at a low cost, since his fuel is cheap, his apparatus simple and his overhead charge for buildings low. Fuel at the mines costs of course whatever it will bring in the market. On the other hand, the question of water supply may be serious, as bad water may necessitate heavy and frequent renewals.

The boilers, engines and generators used at mines are, generally speaking, of the simplest type. Reliability is the primary requisite, and with the unskilled or semi-skilled help available, this can be obtained only with simple equipment. It will generally be found that power costs are capable of material reduction by the introduction of scientific and up-to-date methods of generation, distribution and application. It is here intended to discuss the general features or elements entering into the cost of power both from the point of view of the central station and of the coal operator.

If the results of the investigation make consideration of central-station service advisable, a detailed investigation of existing power costs as well as methods of application should be made. Full consideration must be given to the cost of application in central-station service and the specific advantages to be derived therefrom. By the use of recording watt-hour and demand meters, together with a record of the tonnage, the total consumption, maximum demand and power requirements per ton of coal mined may be obtained. This data will afford a means of comparison of central-station service and isolated-plant operation and may be used as a basis of further estimate.

In selecting the equipment necessary in order to enable central-station service to be used most economically, it should be borne in mind that it is desirable to have as little machinery as possible operated by direct current, as such operation increases the losses due to transformation of the central-station supply.

A plant operated partly by steam and partly by central-station power is ordinarily not advisable. Consequently all steam equipment should be changed to electrical. This

\*4506 Fifth Ave., Pittsburgh, Penn.

condition necessitates that fans, pumps and other steam-driven equipment should be converted into alternating-current motor drive, while rotary converters must be installed for supplying direct current to the machinery inside the mine.

Before committing himself to the adoption of central-station power the operator should convince himself by a thorough investigation that the change will bring about justifiable economy. Consideration should be given to the estimated saving in dollars and cents as well as to the investment required to secure this saving. The life of the mine, the location and competitive features of the available market, the value of the coal, conditions of mining, general reputation of the company furnishing power as to continuity of service, the plans for future development of the existing operations and the possibility of later additions, as well as other related features of the operation, should be given due consideration before any investment or changes are made. Regard should also be had for the general features of attendance, operation and control, also to the flexibility and adaptability of electrical equipment to the severe conditions encountered in coal-mining work.

#### REPLACING PERFECTLY GOOD APPARATUS WITH NEW

The contention is usually made that a change of power supply necessitates disposing of existing equipment and that it does not seem reasonable to replace apparatus in good condition with new. If proper depreciation on the old apparatus has been charged against it, its value as carried on the books should be small, and if the proper method of bookkeeping has been employed and a certain percentage charged against the original purchase price of the equipment for each year of operation, the original cost will have been in large measure liquidated and the interest due to this investment can be charged off as practically zero.

In case the operator is unable to make the financial outlay necessary, but desires to use central-station energy, the power company may purchase and install the necessary equipment, operating it on a rental basis until such time as the original cost, together with accrued interest, shall have been liquidated, after which the apparatus shall become the property of the coal operator. If this method is not followed, the charge to the operator for his power may be of such an amount as to cover the cost of the power and also to liquidate the original cost and accrued interest of the operator's investment within a certain length of time, after which the rate may be reduced to that regularly charged other consumers coming under the same classification as the particular operation under consideration. This rate should be agreed upon when the contract is to be signed.

With many operators the cost of making a change from isolated-plant to central-station power forms a most formidable obstacle. While it is true that the fixed charges as included in the charge made by the central station would be present whether the power was generated locally or purchased, it will nevertheless usually be found that the fixed charge made by the central station is no greater and in many cases is less than when computed on the basis of a local plant.

Assuming that the charge in both cases is equal, it may nevertheless mean much for an operator whether he is obliged to finance an independent power plant or to pay

the equivalent fixed charge on an investment made by the power company. The situation is analogous to the purchase or rental of property, and in any enterprise this difference may either greatly facilitate or handicap development. When money is hard to secure and can be obtained only at a high rate of interest, the availability of central-station service may be opportune by making possible developments that might otherwise be compelled to wait. Where the necessary capital is already available or can be readily obtained under favorable conditions, it should be remembered that all capital not needed for plant outlay may be used elsewhere.

#### THE QUESTION TO BE DECIDED

It is immaterial to the consumer what may be the investment or overhead charges of the power company; the one question to be decided is whether or not power may be utilized more economically and satisfactorily when purchased from a central station than when generated locally. Many coal operations, both old and new, are finding it economically advisable to use central-station service.

Not one operator in ten knows what his power is costing him or what it should cost. Many plants erected during, say, the past 10 years were not designed or built with regard to efficiency or economy in operation, but merely to produce power to mine coal. With the advent of the central station in the coal-mining field, the inefficient and uneconomic operating characteristics of these plants were soon discovered, and it has often been found advisable to correct these faults by purchasing power, where the life of the operation would warrant this course.

In most cases the operator has a scant knowledge of what features enter into the sale of electricity as well as just what is contemplated by the contract. This proposition should be gone over in detail and a thorough explanation made of what is contemplated. The general rule followed by most central stations selling power to coal mines is the installation of instruments recording the kilowatt consumption and the demand.

The basis of a power contract will be a minimum or primary charge which is necessary in order to protect the company in case of abnormal conditions, such as a strike or a more or less indefinite shutdown. The power company has a large investment in transmission lines, generating equipment, transformers, etc., and the fixed charge on this investment is continuous, whether or not the equipment is producing and delivering power.

The minimum charge, while perfectly reasonable from the central station's point of view, may not be readily understood by the average coal operator. A little logical reasoning and explanation should, however, readily convince the operator that all customers, in proportion, have to bear their indirect share of the central station's fixed charge. When abnormal conditions arise it is usual in most cases to arbitrarily reduce the minimum or primary charge by from 50 to 75 per cent. or else to provisionally cancel the existing contract, submitting for it a new and temporary contract based on the measured demand plus the usual charge for energy.

#### DETERMINING THE MAXIMUM DEMAND

The proper method of determining the maximum demand, and consequently the minimum charge, is the subject of a wide diversity of opinion. It is sometimes based on the average of several integrated 5-min. peaks taken

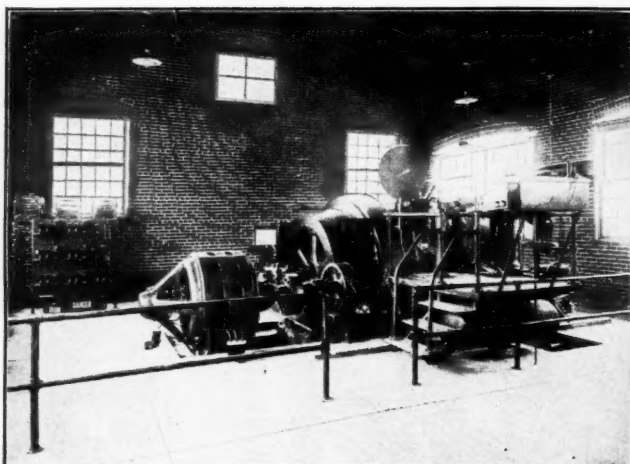


throughout a normal working day. Other companies prefer to figure this maximum demand from the result of the average integrated peaks of longer duration, say 10 to 15 min. The principal objection to this method of calculating the maximum demand is that the peaks may happen to be taken when conditions are not normal and hence may give erroneous results.

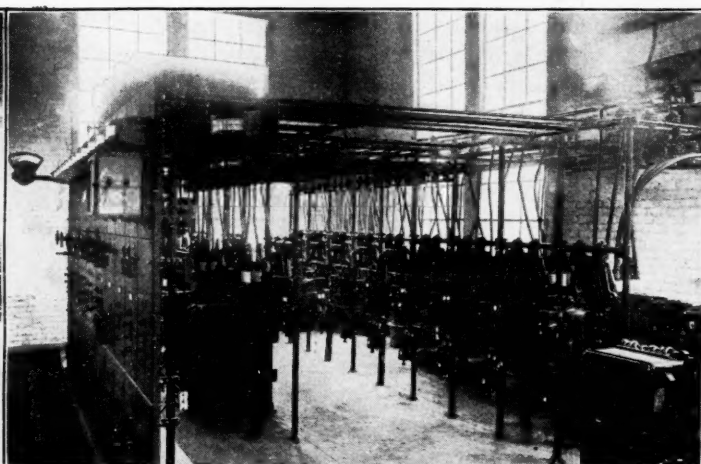
This method, however, of taking the 5-min. integrated peaks seem to be the best and most satisfactory one available. Its coefficient of error is not so large as to make any appreciable difference in the results. In some cases the primary, or minimum, charge may be based on the load factor, which is generally understood to be the ratio of the average load in kilowatts extending over an appreciable length of time to the manufacturer's nameplate rating of the equipment connected to the central-station service line, either direct or through transformers.

If the cover is not too great, it is usually thought best to make a surface location for transforming equipment, taking the direct-current lines through bore holes to the selected point of distribution inside the mine. When a surface location is made, it should if possible be so located as to render unnecessary the devotion of the entire time of an attendant to its operation. A rotary transformer may also be located inside the mine, but such a procedure is not recommended because of the dirt, fire and water hazards, and also on account of its general inaccessibility. If so located, however, the equipment should be installed in a moisture- and fire-proof concrete room.

The economics of application will be largely determined by the conditions of roof and bottom, presence of water or gas, distances from the working face, main parting and pit mouth, fire hazard, attendance, etc. No set rule can be laid down, but each case should be thoroughly gone over



A 300-HP, 2300-VOLT ELECTRIC MINE HOIST  
AT GREENSBURG, PENN.



THE SWITCHBOARD IN LUZERNE SUBSTATION NO. 2,  
PUNXSUTAWNEY, PENN.

These methods of estimating may be adjusted from time to time as agreed upon at the signing of the contract.

Actual figures obtained from existing installations show a fixed charge per kilowatt of demand for isolated coal-mine power plants varying from \$12 per year in the large plants to \$20 per year or more in the smaller ones. On this basis it does not seem unfair for the central station to make a fixed charge of \$1 per kilowatt per month of demand plus a graduated charge per kilowatt of consumption, the final rate per kilowatt-hour to depend on the total power consumed.

Tests on different mines show a power consumption varying from 1.5 to 3.5 kw.-hr. per ton of coal mined, values higher or lower than those given being found, depending on the local conditions prevailing at the different mines. Knowing the current consumption per ton of output, the average cost per kilowatt-hour and the tonnage, it is possible to estimate, not only the total consumption, but also the cost for power per ton of coal mined.

#### TRANSFORMERS SHOULD BE CENTRALLY LOCATED

In order that the power may be applied efficiently and economically, the transforming equipment should be located as near the center of the load and distribution as possible. Since rotary transformers may be placed in any convenient point, this condition may be obtained at minimum expense and the set may be relocated from time to time so as to secure the most efficient arrangement.

and the application be made on the merits of the investigation. The general features of flexibility of movement and operation also apply to the stationary motor equipment and enable location of fans, pumps, etc., to be selected without reference to the boiler room, at the same time eliminating long lines of expensive and inefficient piping.

It is the general practice to use direct-current motor equipment inside the mine. As central-station power is supplied as alternating current, it is necessary to convert this supply to direct current. This may be accomplished by means of motor-generator sets or rotary converters. Synchronous equipment is often insisted on by the central station or a special discount given when used, or some other consideration made.

In some cases where power is supplied for use in a number of operations belonging to one company, it may be possible to locate one step-down transformer substation reducing transmission voltage to a potential suitable for distribution, say to 2300 volts, in such a manner as to serve the several operations. In this case the power company is usually willing to give an additional discount.

#### SELECTION OF CONVERTING EQUIPMENT MERITS CARE

Care should be taken in the selection of the rotary-converting equipment, the idea being to install machinery sufficiently flexible to enable that part in use to operate as near full-load conditions as possible. It may be found



advisable to install a large and a small set, the former to take care of the day load and the latter to be used at night, the two being operated together on peak loads and under any unusual conditions that may occur.

If it is decided to use a motor-generator set, the initial investment may be capable of reduction on account of the possibility of using the old direct-current generators in the isolated plants as the direct-current elements of the motor-generator sets, either by belting or direct connection, preferably the latter. A direct-connected set is more efficient on account of the elimination of belt losses and requires less floor space than does a belted unit.

In determining the necessary capacity of the rotary-transforming equipment, alternating-current motors should be installed wherever possible. This may be done on such equipment as fans, hoists, pumps, slope hauls, etc. The use of alternating-current motors drawing power from the transmission line or from the secondaries of the high tension step-down transformers obviates conversion losses, thereby reducing the power bill to a minimum. It also reduces the size of the rotary transformer and the initial investment and acts to make the overall cost of operation a minimum.

Where it is necessary to use motors for hoisting, whether from shafts or slopes, the use of alternating-current machines throws the wide and sudden fluctuations of current and voltage onto the transmission line, where they are more easily taken care of than when a direct-current motor is used.

Inasmuch as the power is usually metered on the alternating side of the rotary transformer, a considerable saving in cost of operation can be made by having as little equipment as possible operated by direct current. This saving will usually be found to more than compensate the increased first cost of the installation. The steadier the direct-current voltage, the fewer the burnouts and the higher the efficiency of the equipment operated on the direct-current circuits.

#### TRANSMISSION AND DISTRIBUTION SHOULD BE EFFICIENT

The transmission and distribution systems inside of the mine should be as efficient as possible. It will generally be found that conditions here are capable of improvement by the exercise of care and attention, but it is a difficult matter to bring about this desirable state of affairs. As long as the equipment inside the mine operates and coal may be got out, little thought is given as to how much more cheaply or satisfactorily it might be possible to carry on this work if reasonable care and attention were given to the transmission and distribution circuits. Losses due to poor bonding and feeder-line construction may, and in many cases do, materially affect the efficiency and upkeep of the electrical equipment as well as the output of the mine and the power bill.

Where a motor-driven fan is employed, care should be taken in the location of the equipment, consideration being given for both present and future requirements. The amount of power that may be wasted through uneven or ununiform air passages and through allowing accumulations of rock on the floor of the airways may be considerable, while the saving that may be effected by keeping the passages clear more than justifies the expense.

When opening a new mine, it is usually advisable to employ a small fan motor, increasing its size when it becomes inadequate to perform the work required. Two-

speed fans may be used when a small amount of air is necessary during periods of shutdown or at night and on Sundays, but care should be taken to select a motor that will have sufficient capacity to satisfactorily meet full-speed requirements.

#### HOISTING SHOULD BE BY ALTERNATING CURRENT

For shaft hoisting or slope haulage work it is usually advisable to use a variable-speed alternating-current motor. This type possesses features of design and construction that enable it to perform satisfactorily under the severe conditions imposed, and being alternating current it may operate independently of the direct-current equipment.

In some cases it may be desirable to use a direct-current motor for the hoist, in which case a suitable motor-generator set, either with or without a flywheel, may be employed. It is not generally advisable to attempt to convert an old steam-driven hoist to motor drive, as it will be found cheaper and more satisfactory to buy a new hoist equipment and sell the old one for whatever it may be possible to obtain.

Mine pumping is a desirable central-station load, since it is steady 24 hours per day. Pumping by electricity is more reliable and economical as well as more flexible than by steam or compressed air and acts to increase the operating-load factor of the installation. The equipment, furthermore, is self-contained and portable.

#### SALE OF POWER REQUIRES SKILL AND EXPERIENCE

The sale of power to coal mines on a mutually satisfactory basis necessitates a special knowledge and experience in this particular field. Patience on the part of the central-station representative is essential, as it requires time and detailed investigation to obtain the data and information to make possible the submission of an intelligent proposition.

Continuity of service, especially where pumps and fans are concerned, is essential. It is generally advisable, therefore, to employ the services of a competent consulting engineer when considering the advisability of using central-station service either as a substitute for locally generated power in a mine already open or in an entirely new operation. Many men who are able executives and efficient and successful in their own line of endeavor have met with trouble through their failure to recognize that the engineering and executive side of mining are totally different. Success can come only from a full recognition that expert advice based on long experience is essential to safety and efficiency in the production of coal.

The favorable development of a coal-mining load abounds in profits to the central station, particularly if it was primarily a lighting proposition, the increased load factor making it possible to sell power at a low rate. The great difficulty confronting the company first entering this field is a lack of information relative to the price at which it can afford to sell power. Any effort on its part to regulate the various peak loads according to its capacity in order to determine the rate, rather than by placing itself in a position to handle the demand of its customers under all conditions, can result only in uncertainty or confusion regarding the ultimate outcome. Installation of the necessary equipment on the principle of being a public servant rather than for the benefit of a single customer is the only safe method of determining what the traffic will bear.

# Why Are Strikes at Coal Mines of Such Frequent Occurrence?--I

BY HUGH ARCHIBALD\*

*SYNOPSIS—The first part of an answer to Mr. Le Baron's question as to the reason for so much strike turmoil in mining. The writer declares that the rate per ton paid to the miner is sufficiently high, but states that no one seems anxious to see that he is aided in producing a large output.*

In the editorial in the issue of May 22 entitled "Can Someone Enlighten Mr. Le Baron," the question was asked whether there is any need for the continual strike turmoil in mining. In the final analysis it will have to be conceded that strikes are unnecessary.

Strikes instead of being biennial or triennial affairs in the different mining districts can be reduced to a negligible minimum. But to accomplish this a few ideas which are now considered excellent, but which are condemned because they are not considered as constituting "good business," will have to be recognized as working principles.

These principles are three: 1. Every man must earn a day's pay. 2. Every man desires to live decently, and his scale of living rises with his ability to pay for it. 3. Nothing exists without a cause, and the United Mine Workers of America would not exist if there was no need for it. These things are so tied up with each other that a discussion of them almost runs around in a circle, and the end of the argument depends on the point of beginning. But there are changes to be made before peace will settle over coal mining—a peace that is possible and would be advantageous to the operators and to the workmen.

## THE WORK RATHER THAN THE WAGE TELLS

Whether the first of these principles is fulfilled—that a man must earn a day's pay—depends on whether the mine is organized partly for the purpose of providing that work or is planned solely with other purposes in mind.

The men in a mine can be divided into two general classes according to the manner of paying them—one class is paid by the day and the other by the piece.

The first are generally known as daymen or company men and the latter as miners. The pay of the daymen is definite and is the same whether there is much or little to do. These men may not receive as much as the miner, but it is regular and is not high one month and low the next. The earnings are constant, so that at the end of the year the company man is financially in a better position. As a result it is easier to get men to do company work than to mine coal. The main strength of the union has lain in the miners, who are numerically greater and who suffer the greatest variation in wages.

The following data are taken from a two-week payroll at a typical anthracite mine: The number of men drawing less than \$1 a day based on the number of days they worked was 23; those getting between \$1 and \$2, 45; those from \$2 to \$3, 50; from \$3 to \$4, 32; from \$4 to \$5, 16, and over \$5, 18. Such variations cause discontent.

\*Efficiency engineer, Scranton, Penn.

In COAL AGE for Jan. 9, Vol. 7, p. 45, it is reported for six counties in Arkansas that the average net earnings for the men working in rooms was \$538 for the year and for the bottom men \$529. Comment is then further made that "the average earnings of miners and men at other classes of work will be less than last year. Practically all the mines are crowded and a slow turn of cars generally prevails. The number of men locked out or on strike for one cause or another during the past year was over 46 per cent. of the total number employed at the mines."

It is clear, therefore, that there are more men than are needed for the output required, and it is fair to assume that there is a high cost of mining. Where there are too many loaders there are too many working places, and the transportation force having to visit all these workings has to be made unduly large. In turn the inefficiency of the haulage system results in the idleness of the men.

In two of the counties in Arkansas the earnings of the company men are greater than those of the men in rooms, though custom has it that they should draw the lower pay. The difference between the highest and the lowest of the company men is \$270 and that between the roommen \$390.

## MINIMUM WAGE IS THE DISTRESSING PROBLEM

The low average of the mine workers' earnings is not the cause of the unrest. The discontent rather has its source in the inadequate pay of those who do not earn the average wage. The percentage of low pays may be balanced by a number of high pays with a good average as a result, but what should be desired is a greater equality in the amount earned. Much difference in the monthly income of the men indicates a poor arrangement in the mine, from which results a large difference in earning opportunity. This state of affairs is generally accompanied by unnecessary expense to the company.

It is often hard to interest a manager in the arrangement of the work in his mine so that the miners can earn a day's pay or so that there can be a more uniform wage. There is an idea in the minds of many bosses which has been handed down for many generations that a man should not be allowed to earn high wages. I, like many others, have held back a part of a man's pay when it was over a certain amount until he had a lower pay with which to offset it for fear that the "big boss" would make trouble for me for allowing the man to earn so much money, though he was only getting paid at the standard rates fixed by those over me. On the contrary I have never been censured for low pays, numbers of which have appeared on the pay statements of my subordinates.

Keeping a man's pay low was merely self-preservation in the days when a workman who was proprietor of his business had a helper who might save up enough money to start in business for himself and enter into competition with his former employer. It is doubtful, however, if any miner nowadays could save up enough in a lifetime to open up a mine for himself with all the equipment that is now needed. There need be no fear that if a miner earns a good pay he will create competition in the sale of coal.



It may be argued that the miners are making a day's pay where they are not lazy. That is not the case in many mines. To be sure the operator must bring pressure to bear upon the worker to get him to work regularly and do a full day's work. But this is not the principal difficulty, and the difference in earnings is small where opportunities to load coal are reasonably equal.

The rates paid for mining are high—almost too high. In the union districts in central Pennsylvania the price for pick coal is 72c. a ton. This is paid whether the mining is in rooms and the coal hard or whether it is in pillars which have been standing and the coal is crushed. In the latter case a man can dig and load a ton in 20 min. At that rate he ought to earn \$8.64 a day, allowing 50 per cent. of the time for resting. But what happens? He does not get enough cars to earn anywhere near that amount.

I have heard it stated that the men in central Pennsylvania earned more money when pick coal was 35c. a ton than they do now. But the past and present conditions have not been taken into account. One man telling about "olden times" at one mine said: "There were not many men here then, and the boss used to be around all the time telling you to load more. We made good money in those days." The blame for the loss in earning power is often angrily put on the union, whereas it ought to be partly borne by the men running mines for not maintaining correct conditions—men in proportion to the equipment and bosses in proportion to the mine.

#### RATES OF PAY SHOULD MAKE AN EQUAL WAGE POSSIBLE

There is an inflexibility in the rates paid for work which makes an inequality in the earning power of the men. Rates are generally the same for all parts of a mine or for all parts of a vein. In one anthracite mine \$1.58 is paid for a 2-ton car of coal whether the vein is 8 ft. and free blowing or 4 ft. and hard coal. In the bituminous regions the same price is paid for pick coal whether it is in rooms or in crushed pillars. Business has been business in establishing the rates, and in any argument between employer and employee over what the rate should be, the attempt on both sides has been to charge all the traffic would bear. There has been no measurement of work by which attempts could be made scientifically to get an equitable basis for payment. Measurement of work is just as practical in mining as in manufacturing, where it is now being largely done.

Although the payment is made according to the ton or car loaded, responsibility for the amount of work done cannot be wholly cast aside by the management. Men are turned loose in a mine entirely too freely and expected to work out their own salvation. They cannot do it, for they do not work alone, but are dependent upon others for the opportunity to work.

The drivers, being paid by the day, are not anxious to deliver more cars than are necessary to keep their jobs and so neglect the miner. In consequence the miner does not earn as much as he might. One can hardly blame the driver so long as it is a fixed principle in life to get as much for as little as possible. Everyone is doing it, and he would be "kidded" by his friends if he did not practice it. Universally a mine is so undermanned by bosses that no work can be followed up, and the neglect of duty and failure to cooperate can become so common that the miners frequently suffer from needless delays.

Were the miner cutting the coal himself and delivering his own cars to the foot of a shaft or to a large side-track, he would be more independent and could be more reasonably blamed for not earning his pay. Such a system exists in some mines in England, but in this country we use larger cars and deliver them to the miner.

#### MINERS SUFFER FROM THE LACK OF ORGANIZATION

The individual in a mine depends on the management to organize the work so that the proper balance is kept between the various machines and the work of each man or group of men.

A superintendent recently remarked that it is hard to stir up trouble at a mine if the men are being decently treated and are earning a day's pay. It will be found that the strength of a union increases at a mine in proportion as there is more cause for discontent. But this is not to be regarded as an argument that the men should be paid whether they do any work or not.

Increased earnings of the individual can be reflected favorably on the cost sheet. A man who is working a piece of coal which has been formerly neglected and is so situated that he is given only a car or two a day and whose earnings in consequence are low is likely to be a source of trouble. When it is necessary to keep a man and a mule for only a few cars a day, the transportation charge will be high. The cost of gathering was taken in one mine and found to run from 21½c. to 25c. The total cost for haulage was high because on only a few roads were there enough men to give a driver a full day's work. When the work was apportioned so that there were enough men on each road, the cost fell.

#### NEED FOR A FULL TURN OF CARS FOR EACH MAN

It would be more advantageous to the workmen if the union leaders, instead of making demands for further increase in the rates of pay, asked for a better organization of the work so that the men got an equal number of cars. Rates are high enough now so that no man need overwork himself in earning a good pay. In a boiler-room a fireman will shovel into the furnace from 18 to 20 tons a day, which is more than a loader will load into cars.

One well-known union leader has been quoted as saying that 15 tons was not too much for a man loading after machines, and the union representatives agreed to a task of 12 tons at one mine. When one gets into the complex changing conditions of an anthracite mine it might seem a little doubtful whether this could be done, but again it is a case of the arrangement of work rather than a crying need of an increase in rates.

A recent number of *Coal Age* gives a high output per man at one mine of 5.1 tons a day, but even this is strongly in contrast with what is admittedly possible.

Under the present general manner of payment the only cure is to promulgate the idea that each man should produce a large tonnage per day. An increase in their output will be of advantage to the miners, as they are paid by the ton. It will also be to the interest of the company, for an increased output per handling unit will result from the proper organization of work by which the larger product is secured. Though there is no one cure for all ills, the application of the principles of efficiency to mining will greatly help to alleviate the conditions which are now a frequent and natural source of much irritation.

## Miners Who Don't Mine

There are nearly a hundred thousand employees in the collieries of the anthracite coal fields of Pennsylvania who mine no coal. The exact number in 1913, the latest figure available, was 96,991. The men who mine and load the coal are the miners with state certificates who drill holes and blow down the coal with explosives, and the miners' laborers who assist the miners in drilling the holes and load the loose coal into mine cars. There were 44,346 miners in 1913 and 33,973 miners' laborers.

Thus the army of men who are employed at ventilation, transportation, drainage, maintenance and the preparation of the coal for market outnumbers by over 18,000 the men who are actually mining and loading coal. In other words, it takes more men to keep the mines safe and in

## Handling Coke from Retorts

BY R. G. READ\*

The handling of coke at retort houses is receiving a thorough study with the idea of eliminating labor and making a better preparation of the product. Extensive advertising campaigns in various parts of the country have resulted in a keen demand for domestic coke to take the place of anthracite coal. To successfully meet this demand it is necessary to make a careful preparation of the coke including a through sizing to correspond to the various grades of anthracite.

Coke is fragile, absorptive and abrasive, and may be likened to an egg, a sponge or an emery wheel. A successful handling equipment must therefore convey



WISCONSIN GAS & ELECTRIC CO.'S PLANT FOR STORING AND SIZING COKE WITH DE BROUWER CONVEYOR FOR CONVEYING AND QUENCHING THE PRODUCT AS IT LEAVES THE RETORTS

condition to be operated than it does to mine the total output of coal.

There are nearly a hundred different positions in and about every colliery for which special training is not only advisable but often indispensable. The mere terminology of the various positions is confusing. There are doorboys, or "patchers," drivers, runners, bratticemen, masons, timbermen, tracklayers, foremen and assistant foremen, fire-bosses, pumpmen, blacksmiths, carpenters, engineers and firemen, slatepickers, breaker boys, and a host of others.

The excellent mine schools which now exist throughout the anthracite region either under the supervision of the local school boards with state aid, maintained by the operators, or conducted by the local Y. M. C. A.'s are now providing the special instruction and training necessary for many of these positions. Mining problems are discussed and much information is also disseminated through the mining institutes which are held throughout the region.

and screen with a minimum breakage, quench without saturation and provide against excessive wear on the machinery.

A successful machine for conveying and quenching the hot coke as it comes from the retorts is the De Brouwer conveyor. This was originated in Germany and is in extensive use abroad. A modification of the De Brouwer suited to American conditions has been perfected and installed in a number of plants in this country, particularly in the New England States.

This conveyor consists of two strands of special chain with crossbars spaced about 24 in. centers. This moves slowly in a watertight cast-iron lined steel trough. The quenching is accomplished by sprays placed above the carrying run of the conveyor. By this arrangement the amount of water can be easily adjusted so as to thoroughly quench the coke without soaking it, as the thickness

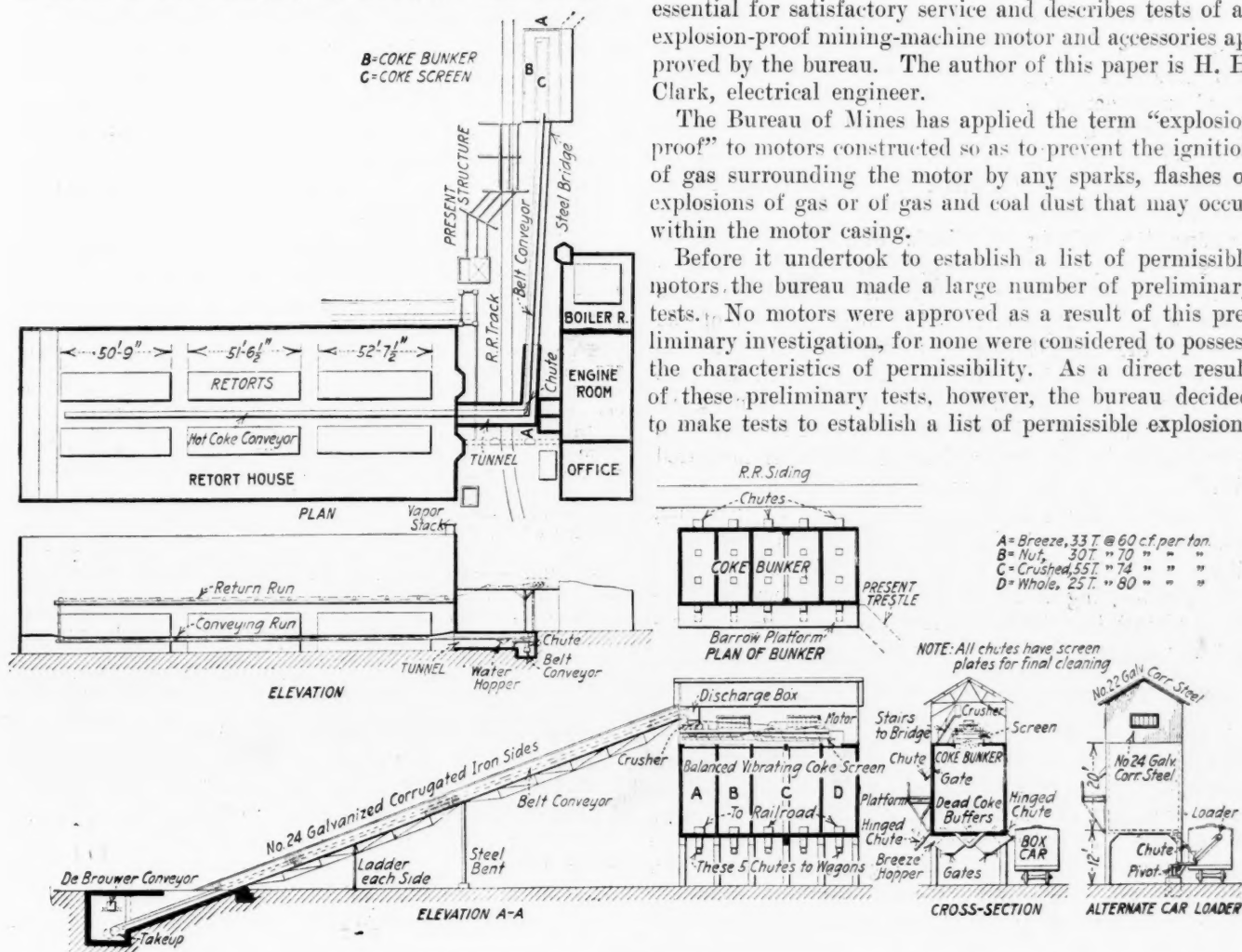
\*Fisher Building, Chicago, Ill.



and speed of the moving body of coke are under control. The excess water is drained by means of a water grate in the conveyor trough. This grate is in the form of screen bars so spaced as to refuse breeze, but pass the water.

The grading of sizes may be accomplished by either a revolving screen of the open type or by a balanced vibrating screen. The vibrating screen is preferable for the fine sizes as it gives the body of coke a thorough agitation without dropping it as is the case with the revolving screen.

A typical and up-to-date handling plant of this type is shown in the accompanying drawing. The operation



PLAN AND ELEVATION OF THE GAS AND COKE PLANT OF THE WISCONSIN GAS & ELECTRIC CO., RACINE, WIS.

is as follows: The hot coke is pushed from the retorts into a hot-coke car which travels on overhead tracks and serves as a chute for each group of retorts. The coke passes by gravity to the carrying run of the De Brouwer conveyor, which quenches and delivers it to a belt conveyor.

This belt conveyor takes the coke to the screening station, where it may be either crushed or not and screened to make the various sizes indicated. Provision is made for storing the coke in the yard either screened or as it comes from the oven. The coke from the storage yards may be returned by means of other equipment to the screening station when desired. The plant is being installed for the Wisconsin Gas & Electric Co. at Racine, Wis., by R. H. Beaumont Co., of Philadelphia, Penn.

## Permissible Mine Motors

Among the Bureau of Mines' investigations dealing with the means of lessening such dangers as attend the use of electricity in the mining industries, it has undertaken one that has for its purpose the establishment of permissible explosion-proof motors for use in places where an electric spark or flash might ignite inflammable gases or dusts.

Technical Paper 101, "Permissible Explosion-Proof Electric Motors for Mines; Conditions and Requirements for Test and Approval," which has just been issued, mentions the details of construction that the bureau considers essential for satisfactory service and describes tests of an explosion-proof mining-machine motor and accessories approved by the bureau. The author of this paper is H. H. Clark, electrical engineer.

The Bureau of Mines has applied the term "explosion proof" to motors constructed so as to prevent the ignition of gas surrounding the motor by any sparks, flashes or explosions of gas or of gas and coal dust that may occur within the motor casing.

Before it undertook to establish a list of permissible motors the bureau made a large number of preliminary tests. No motors were approved as a result of this preliminary investigation, for none were considered to possess the characteristics of permissibility. As a direct result of these preliminary tests, however, the bureau decided to make tests to establish a list of permissible explosion-

proof motors, and issued its Schedule 2, "Fees for Testing Explosion-Proof Motors." This gave the general conditions under which motors could be submitted for trial and the fees to be charged for making such tests. Technical Paper 101 sets forth more fully than Schedule 2 the details that the bureau considers essential to satisfactory explosion-proof motor construction.

The Bureau of Mines considers a motor to be permissible when it is the same in all respects as the sample motor that passed certain tests made by the bureau and when it is installed and used in accordance with the conditions prescribed by that body. The paper gives the requirements for approval of motors, outlines the nature of the approval of the bureau and describes the approval of an explosion-proof coal-cutting equipment.

## Co-operative Mining in Illinois Threatens the Industry

*SYNOPSIS—A summary of the peculiar status of coöperative mining in Illinois. Union members of one company have already thrown down the gauntlet to the United Mine Workers of America and the situation is replete with serious possibilities. The movement is spreading rapidly and is a menace to legitimate mining companies.*

Coöperative enterprises of different kinds have been tried time and again, but as a rule they have seldom proved an economic success. Coöperative coal mining in the Illinois field, however, does not seem to fall in this class. It has been in operation for some time, and of late has spread so rapidly that it even threatens to become a national issue.

Coöperative mining in Illinois originated some years ago, and was more or less directly due to railroad ownership of mines. It is generally believed that the roads quoted a delivered price, including both the cost of the coal and the freight rate, that aggregated much less than an independent operator could compete with. This eventually wound up in a spectacular rate war among the trunk lines, during which freight rates were slashed down to as low as \$2 per car to East St. Louis, as compared with 32c. per ton at present.

It was out of this war that the independent operators, seeking relief from the untenable conditions prevailing, hit upon the plan of coöperation. The miners themselves had been working on such poor time that they were reduced almost to extreme poverty and were eager to accept any change whatever.

### UNION STRONGLY OPPOSED TO SUCH COÖPERATION

The method of operating the coöperative mine was brought out fully before the scale committee meeting at Peoria, Ill. It appears that the miners, who are all union men, are assessed the difference between the cost of production and the ultimate selling price. Thus, although they are nominally receiving the full wage scale, they are obliged to rebate the company for losses incurred by working the mine when adverse marketing conditions prevail.

At this same meeting the officers of the United Mine Workers of America assured the independent operators in attendance that drastic measures would be taken to do away with these coöperative mines. There are now about 10 concerns, having an aggregate daily capacity of 8000 tons, who are operating on a coöperative basis, and the indications are that this may very probably be doubled within a year, unless aggressive action is taken. The operators more closely in touch with the situation are very skeptical of the union's power to cope with the matter. It is generally felt that should the organization resort to the drastic measures mentioned, the local union will give up its charter and the mine will become non-union. This would, of course, be a serious blow to organized labor.

Some of these companies are incorporated under the laws of Illinois; others are copartnerships. In either

case the miners buy shares, usually from \$100 to \$200 each. The number of shareholders runs from 20 to 100, depending on the size of the mine. Some of the mines work only coöperatives, but the greater part of them work some members of the U. M. W. of A. When there is a demand for coal, all the companies work all the union men they have room for.

In the case of the Oakland Coal Co., located near Belleville, Ill., the loss Feb. 15 to Mar. 31, 1914, equaled one-third of the union scale. In other words, if a man worked 10 days at \$3 per day, he received \$30 and paid back to the company \$10. This statement is based on an affidavit made by a stockholder of the Oakdale Coal Co., which was as follows:

Belleville, Ill., April 18, 1914.

#### To Whom It May Concern:

I have been and am now working for the Oakdale Coal Co. I own six shares in this company. I should have drawn \$22 on Mar. 15, but I drew none of this and had to pay in \$5 to defray expenses.

I should have drawn \$42.50 on Mar. 30, but they paid me \$12.50 and the other \$30 was used to defray expenses.

I should have drawn \$77 on Apr. 15, but I was paid only \$57 and the other \$20 was used to defray expenses.

Whenever we do not get enough for our coal we assess each man a certain amount and deduct it from his pay.

In other words, I mean, if we do not get enough money from the sale of our coal to meet our payroll, we assess each man a sufficient amount so that the money from the sale of the coal and payroll will balance.

State of Illinois,  
County of St. Clair

, residing in the city of Belleville, county of St. Clair, state of Illinois, personally known to me, Stephen A. Butler, a notary public, in and for the above county, appeared before me this 18th day of April, 1914, and made affidavit that the above statement is true and correct.

STEPHEN A. BUTLER,  
Notary Public.

Two of the ten coöperative mines were sunk by the miners—Golden Rule, near Lenzburg, and Mulberry Hill, near Freeburg, both on the Illinois Central R.R. On account of the stress of competition, the mines at these two small towns were closed about 1910. The company then owning them, having mines in other localities on the Illinois Central R.R., refused to lease these two plants to the miners, who then opened mines themselves.

### STRONG ARGUMENTS FOR COÖPERATIVE MINING

A great majority of the miners of Illinois are thrifty, saving men, and as soon as they think they are permanently located, begin to buy lots and build homes, getting the money mostly from building associations. Freeburg and Lenzburg offered no other opportunity for employment, and if the miner moved away his home would become valueless. The business men faced practically the same condition; the moving away of the miners meant the destruction of their trade and an enormous shrinkage in the value of their real estate.

There being a 7-ft. seam of coal at a depth of 90 ft., the miners leased the land on a royalty basis of 3c. per ton. Mines were sunk at Freeburg and Lenzburg, the miners doing the labor and the business men in the respective towns advancing the necessary funds. Since commencing operations these properties have repaid all



money expended on them and the miners now not only own them both, but have protected their properties also.

The Bessemer Coal Co., which owned the original mines near Freeburg and Lenzburg, went into the receiver's hands about 1912. On sale of this company's property, the Freeburg mine was purchased by L. Senior, of Belleville, and the Lenzburg by the Tierre Coal Co. Since Apr. 1, 1914, neither of these properties has been operated, while both of the cooperative companies have been working every day. The eight other cooperative companies lease their mines from operators who were unable to make both ends meet. The royalty paid runs from 3c. to 6¼c. per ton of mine-run. All the cooperatives belong to the U. M. W. of A. and are supposed to get the full scale, although none of them do.

#### DIFFICULT POSITION OF THE MINERS' UNION

The last cooperative mine was started Apr. 1, 1914, 100 miners purchasing the operation of the Winkle Coal Co., located in Winkle, Ill. The mine was acquired without a cash payment being made, the men agreeing to make a part payment twice a month until the agreed price was liquidated. Upon hearing of the Winkle cooperative organization, the officials of the U. M. W. of A. began to act. An executive board member was sent there, who shut the mine down and called a meeting, at which he told the men they would have to give up the mine or he would take their charter away. By a large majority vote the charter was relinquished. The mine is still in operation and no further effort on the part of the U. M. W. of A. has been made to stop it.

All the cooperative mines are located in the "Inner Group" and take the lowest freight rate to East St. Louis and St. Louis—32c. and 52c. per ton. The production is sold by brokers in St. Louis, the price usually being on a basis of 79c. or 80c. f.o.b. cars at mine for run-of-mine coal. Of this the broker takes 3c. for his commission. He settles with the producer twice a month.

#### THE LEGITIMATE OPERATOR BETWEEN TWO FIRES

The average cost of mine-run coal with the legitimate operator, f.o.b. cars at mine, runs from 90c. to 95c. The only operator who can compete with the cooperative mine is one who owns both mines and railroad and is willing to give away part of the freight profit with his coal. At a hearing before the Interstate Commerce Commission in St. Louis last fall, several witnesses testified that the St. L. & O. F. R.R. Co. and the St. L., T. & E. R.R. Co. made a practice of doing this. Of course the excessively low price is made only during the dull season, from Apr. 1 to about Aug. 1.

Contracts for coal that run for a year or two are generally let at prices that show a small profit to the legitimate operator, but open-market business in the dull season is practically all taken by the cooperatives and railroad-owned mines. As a consequence, legitimate mines do not work over two days per week, and the companies suffer severe losses during this time.

The coal fields adjacent to St. Louis are ideal for the cooperative. The seam is near the surface, is from 6 to 8 ft. thick, the roof conditions are good and the coal shoots readily on the solid. The average miner can produce 10 tons per day, for which he receives 61c. per ton run-of-mine, making his gross earnings \$6.10 per day; powder, tool sharpening and oil aggregate about

80c. per day. While the cooperative miner gets less than the scale during the dull season, he realizes much more during the busy season. In a series of years, his returns will be more than the mining scale, besides which he works from 50 to 100 days more per year than he would in the legitimate mines.

Owing to these conditions, many operators are willing to lease their properties to the miners, and if the U. M. W. of A. does not interfere, this method of mining will spread rapidly and will eventually displace the legitimate operator, and probably the union also in Illinois.

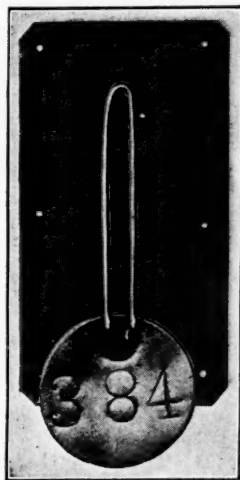
There are several cooperative mines working in the Peoria district and four are now being started near Springfield. The following is a list of the cooperative mines:

| Name                          | Railroad   | Location     | Tons |
|-------------------------------|------------|--------------|------|
| Summit Coal & Mining Co.....  | L. & N.    | Belleville   | 1000 |
| Fullerton Coal Co.....        | L. & N.    | Belleville   | 1200 |
| Eldnar Coal Mining Co.....    | L. & N.    | Belleville   | 800  |
| Oakdale Coal & Mining Co..... | L. & N.    | Belleville   | 500  |
| Mulberry Hill Coal Co.....    | I. C.      | Freeburg     | 1200 |
| Star Coal Co.....             | I. C.      | Freeburg     | 1200 |
| Golden Rule Coal Co.....      | I. C.      | Lenzburg     | 600  |
| Harding Mine (Glendale).....  | I. C.      | Belleville   | 500  |
| Cutler Mine.....              | W. C. & W. | Cutler       | 350  |
| Winkle Mine.....              | I. C.      | Winkle       | 750  |
| City Coal Co.....             | L. & N.    | Edwardsville | 500  |
|                               |            |              | 8600 |

✱

#### New Check Hook for Mine Cars

A new form of check hook recently invented by J. T. O'Neal, of Danville, Ill., is shown in the illustration. The hook is made of No. 14 spring steel wire, and is neatly attached by soldering the prongs on the lower end of the hook to the back of a galvanized iron plate, 2 in. in width and 4 in. in length, made of No. 27 gage material. The plate is attached to the side or end of a wooden mine car with six shingle nails. In the case of fastening to a steel mine car, small rivets would be used. The inventor devised this check hook while working as a car builder at the Vermilion mine of the Bunsen Coal Co., the idea suggesting itself on account of the number of checks that were lost from the mine cars while in transit when attached loosely to a nail on the mine car—the old method. Several of the new-style hooks were placed in service at the mine mentioned, and they proved to be of such advantage that there are



THE HOOK WITH MINER'S CHECK ATTACHED

now over 800 of these hooks in service at Vermilion mine.

Mr. O'Neal explains the following features, which should recommend his form of hook for use by mine operators: The miner's check can not be released or lost except by accident to the mine cars while in transit, and is only removed by the dumper when the car has reached the dumping point in the tippie. No trouble is therefore experienced either by the management or the coal miner as the check on the car is never lost.

The check hooks used at the mine mentioned have been in service for more than a year, and the excellent results accomplished by the use of this form of check hook have been fully demonstrated in actual practice.

## Steel Breaker at Hazleton, Penn.\*

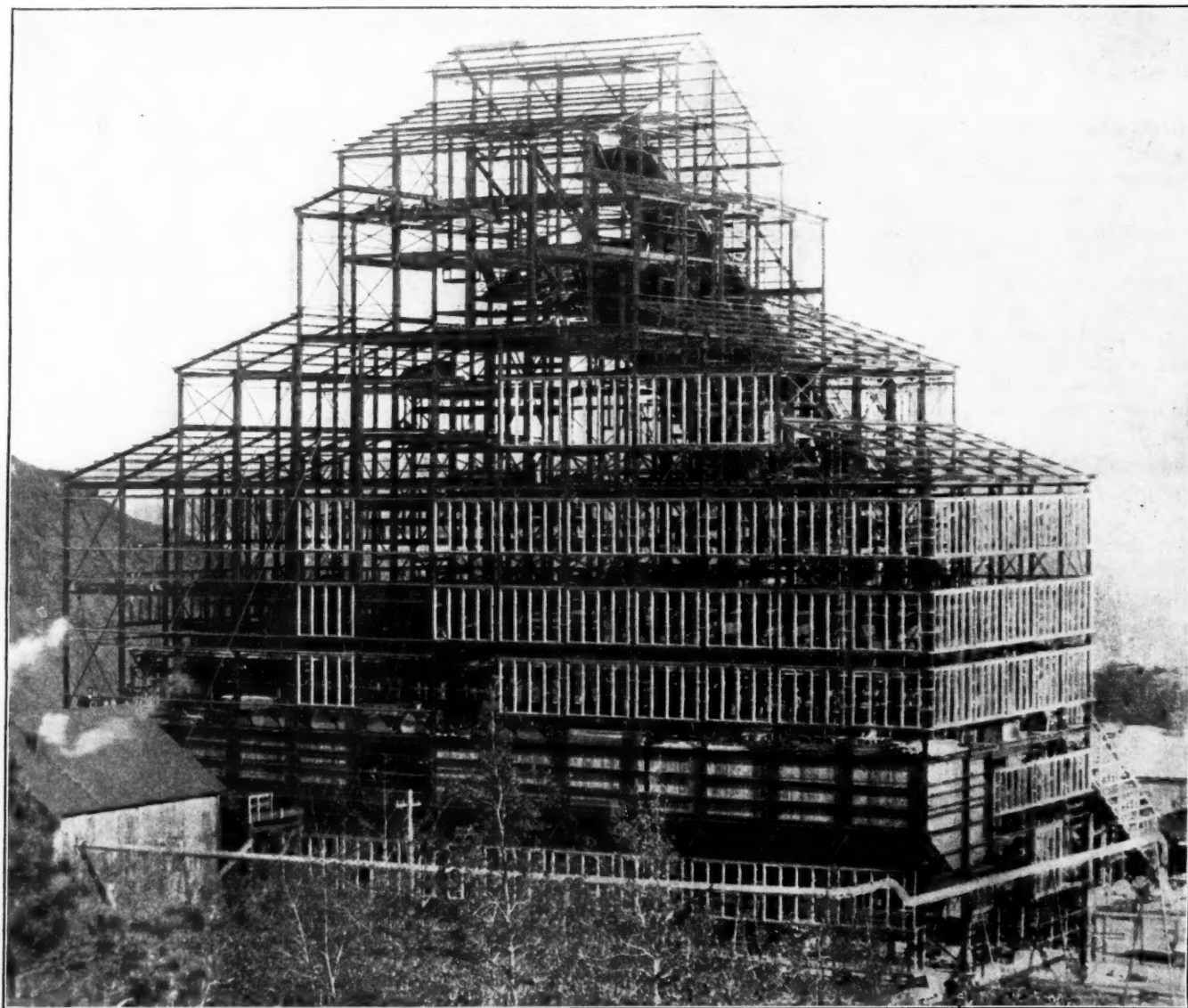
BY C. STUART PHILLIPS†

*SYNOPSIS—A steel breaker at Hazleton was designed and erected in 91 days and, if expectations are fulfilled, will be ready for business 6½ months from the time the contract was let. Only the framework is fireproof.*

Practically the last great industry to cling to the use of heavy timber framing for permanent construction has been the anthracite industry of Pennsylvania; but within

in operation two other steel breakers in the Wyoming Valley, two in the Schuylkill district, and at present three more are in process of erection in the former district and two near Hazleton.

The timber breaker is highly inflammable, framing, floors, siding, roof, pockets and bins being of wood, usually yellow pine. Three disastrous fires, one with loss of life, within the last year have emphasized its danger. The Ewen breaker of the Pennsylvania Coal Co. in the Wyoming Valley, the Lattimer No. 4 breaker of the Pardee



STEEL BREAKER OF LEHIGH VALLEY COAL CO., HIGHLAND NO. 5 MINE, HAZLETON, PENN., 91 DAYS AFTER CONTRACT FOR ERECTION WAS SIGNED

the last three years the wooden coal breaker has started to go the way of the wooden ship and the wooden bridge.

One of the first companies to abandon the old type was the Lehigh Valley Coal Co., which three years ago rebuilt its Mineral Springs and Franklin breakers of structural steel. In the short time following there have been placed

Coal Co., and the Highland No. 5 breaker of the G. B. Markle Co. in the Hazleton district each burned to the ground, being completely lost in two or three hours. In the last-mentioned case the fire was with difficulty kept from spreading down the slope to the mines, the whole plane having to be dynamited to prevent this occurrence.

All these breakers are being rebuilt of steel, and the Markle company is replacing several of its timber planes

\*Published in "Engineering News," July 1, 1915.

†G. B. Markle Co., Jeddo, Penn.



with steel, so that conflagrations, if started, will not spread from the wooden breakers to the mines.

The erection of the new breaker at Highland No. 5 has been interesting because an enviable record for speed has been established for this type of construction. The old breaker burned on Jan. 15, 1915, and the contract for the new steel structure was signed on Feb. 9. The Guerber Engineering Co., of Bethlehem, Penn., designed both the general structure and its details and furnished and erected the steel.

Until the breaker was reerected the coal had to be hauled from Highland No. 5 mine to a breaker 2 mi. distant to be crushed, cleaned and assorted. This entailed much expense, and consequently the G. B. Markle Co. let the contract for the rebuilding of the tippie with a provision that a \$75-per-day bonus or penalty be added or deducted respectively from the contract price to date from May 19, which was 100 days from the signing of the contract.

#### DESIGNED AND ERECTED IN SIX AND A HALF MONTHS

Seven designers were sent to the G. B. Markle Co.'s offices at Jeddo the day after the agreement was concluded. These men worked 14 hr. a day, consulting the coal company's engineers as to panel lengths, machinery locations, loadings, etc. As fast as one section was designed and approved, prints were sent to the detailers at Bethlehem. On the approval of the first batch of details the shop started fabrication.

The design was finished by Feb. 26, and the following day the first shipment of steel was received on the site. The previous week the erecting gang had come on the ground and unloaded their tools and erected the derrick, so that no time was lost. The debris had been cleared away and the foundations prepared by the coal company's forces. The working time was 10½ hr. a day, seven days a week; but much time was lost, 12 days in all, on account of the bad weather.

The field organization consisted of an unloading gang, a derrick gang, a handline erecting gang and four riveting gangs. The derrick used was a stiff-leg 5-ton 100-ft. boom steel derrick, set in the center of the building. The latter being 158 ft. long and 75 ft. wide, the corner columns were reached from the center set-up. When the erection had progressed to the 35-ft. height the derrick was jumped up to that floor and again to the 75-ft. height, from which elevation the rest of the steel was set, 148 ft. being the maximum height in the center of the building, stepping down to about 90 ft. at the two ends.

At each move of the derrick three-quarters of the steel was set with the boom outside the stiff-legs; the boom jumped inside the legs to erect the remaining quadrant. Two panels near the center were left open, as the derrick frame was hoisted up bodily each time the rig was raised, using the boom as a ginpole. When the rest of the erection was completed the derrick frame was dismantled and lowered to the ground and these two panels erected with the boom as a ginpole.

The wind bracing, channel girts for the corrugated siding, etc., were erected by handline. The riveting was done by compressed air furnished by the coal company, Ingersoll-Rand pneumatic hammers being used. My experience has been that the Boyer hammer has usually been the most satisfactory on all-around bridge and building work, but the Ingersoll-Rand proved the best on this

work, being shorter than the Boyer and more easily manipulated in the close quarters afforded by the wide flanges of the Bethlehem sections.

Altogether there are 736 tons in the structure, 25,000 rivets, 8300 bolts, and 900 tie-rods, small castings, etc.; 3000 pieces were erected by the derrick and 1700 by handline.

The first column was erected Feb. 28 and the first rivet driven Mar. 14. The job was completed and accepted on May 11 (the date the accompanying photograph was taken), 91 days after the signing of the contract and 8 days before the contract time expired.

The coal company's carpenters started work on Apr. 18 on the wooden bins, pockets, floors, walks, chutes, etc., and the machinists began installing the heavy machinery shortly afterward. The work of covering the sides and roof with corrugated iron has also been started, and the breaker will probably be in complete operation by Aug. 1, or 6½ months after the destruction of the old timber breaker.

#### STEEL COSTS ABOUT 60 PER CENT. MORE THAN WOOD

Perry Sneathen had charge of the design and Victor Pfeiffer superintended the erection for the Guerber Engineering Co. The G. B. Markle Co.'s interests were placed in my charge, as engineer in charge of erection.

In comparing this type of steel breaker with the standard timber construction, the following comparisons can be made:

1. Cost—The contract price for the steel was between \$65 and \$70 per ton, totaling \$44,000. The framing for a timber breaker of like dimensions would necessitate about 510 M of lumber and would cost \$25,000. While the initial cost of the steel is greater, the smaller insurance rates will in time equalize the two.

2. Speed of Erection—The steel structure was erected, complete, in 60 working days, practically the time required to raise a timber frame. The first delivery of steel, however, was made 18 days after signing the contract. Yellow-pine timbers 12x12 in. and 14x14 in., in sufficient quantity cannot be obtained from the South in less than 60 days after placing an order; thus six weeks' time was saved by using steel construction.

3. Fire-Resisting Qualities—The steel-frame breaker is far less inflammable than the timber frame. It is, however, by no means fireproof unless the remainder of the structure is in keeping.

In the breaker in question there is so much wood in the flooring, walkways, pockets, bins, window frames, etc., that it is quite possible that a fire could break out and generate sufficient heat to soften and weaken the steel columns and cause the whole structure to collapse. If a real fireproof structure is desired, the floors, dump and jig pockets and loading bins should all be of reinforced concrete, the walkways should be of iron, and metal sash should be used for windows. In this connection it may be stated that wooden pockets and bins have to be renewed every five years. Reinforced-concrete walls costing 60 to 75 per cent. more in initial outlay would probably last three times as long.

**Liability of Corporation's Successor**—When a coal company transfers all its assets to another company, practically ceasing to exist, without having paid its debts, the purchasing corporation takes the property subject to an equitable lien in favor of the creditors of the old company. But mere purchase of a part of a coal company's property, after injury had been sustained by one of its employees, did not subject the purchaser to liability for that injury, the selling company having retained sufficient property to discharge all of its liabilities. (Kentucky Court of Appeals, Clouse vs. Carter Coal Co., 173 Southwestern Reporter 794.)

## Extracts from a Superintendent's Diary

This morning I went on a little tour of inspection inside one of the drifts, and after I had finished and was on my way back to my office, still clad in my mining clothes, I had an adventure with a book agent.

He all but collided with me just as I passed Tim Tenney's house. Apparently Tim's wife hadn't given him a very cordial interview; at any rate he seemed pretty much worked up about something and was so busy trying to get his bearings that he was out of her yard and onto the sidewalk before he realized it.

I had neglected to blow out my carbide light on coming into daylight, and the book agent came so near to me that he singed one of his eye-brows on the flame. He managed to get his thoughts together pretty quickly after that.

I extinguished the flame and begged his pardon. He accepted it very graciously, and accomplished something else at the same time—he backed me up against a corner of the fence and started off on his set speech before I realized just what he was up to. It was all done so cleverly that I stared at him in evident admiration. He read my thoughts and waxed enthusiastic.

Then he began to address me as Mr. Coal Digger, so my sense of humor got the better of me and I urged him on out of sheer deviltry. I enjoyed every minute of the experience, even the grand finale when he turned over to the ruled pages in the back of his prospectus and insisted that I sign my name on a certain line.

The title of his book was "Getting on in the World," and again and again while enlarging upon its merits he assured me that it contained all the necessary information to show me how to get above being a common coal digger. He thought that I would have no trouble climbing up to a position in the commissary, and he felt sure I might in time even get an assistant superintendent's job.

I told him all that sounded very well, but I couldn't read or write.

"That don't make any difference," he ventured; "get your wife to read it to you."

"Was that what you suggested to Mrs. Tenney just before I came along?" I asked.

He had to grin in spite of himself. "I sure did, young fellow," he said, "but if I had known what kind of a woman she was, I wouldn't have done it. After I realized my mistake I tried to patch things up for her old man because I sure felt sorry for him, but little did I accomplish. It looked for a time as if I'd have to call on some of the neighbors for protection. I hope her man don't come out of the mine until she has had a chance to cool down some."

Then I changed tactics suddenly and asked him why he didn't absorb a little of the "sure rules for success" himself and capture a job with a fat salary attached.

To which he replied: "Don't get fresh, son, just because I've taken an interest in you. When you work up to my stratum in society, come around and I'll give you some further advice; but in the meantime just attach your signature to the prospectus and sleep with the book when it comes. Just to put you right, though, take it from me that you won't get far unless you learn to respect your superiors."

## The Labor Situation

**SYNOPSIS**—Union anthracite miners are seeking 71,000 new members. Gilday accepts state position. Strike has permanently injured Ohio.

In the anthracite region the canvass of the union for members seems likely to prove as exciting as a political campaign and will be conducted with all the aids which are used by politicians in making an appeal to the electorate. The stores in many places will be closed and the clerks will join the procession. Bands will play and a string of automobiles will be in line. This demonstration will serve not only to initiate the campaign, but to act as a notable recognition of the dignity of mine labor.

The membership of the three anthracite districts is said to amount to somewhat over 100,000 men. The report of the Department of Mines for 1913 shows 175,310 men employed in and around the anthracite mines, but of these 424 are inside foremen, 1086 are their assistants, 778 are firebosses and their assistants, 121 are superintendents, 419 are outside foremen and 841 are bookkeepers and clerks. Some of these men might join the union, and to balance them some of the other men not belonging to the specific categories mentioned might be unlikely to affiliate owing to official position. Consequently the total—3669 men—might be deducted from the aggregate working force of the anthracite region to obtain the number of men who might be expected to be union members. Roughly, then, there are 71,000 men, or 42 per cent. of the whole available working force, whose affiliation is to be sought.

This appears a large number, and in some parts of the region there must be large bodies of men ununionized; for in others the 100-per cent. union has been secured. However, it must not be supposed that the union is disintegrating, for in 1912 the membership was not nearly so general. It was then only about 30,000, while in 1910 it was little more than 15,000.

### Pat Gilday Becomes Chief of Bureau of Mediation

Patrick Gilday, of Morrisdale Mines, Penn., who was formerly president of District No. 2, which covers central Pennsylvania, and who was succeeded at the last general union election by James Purcell, of Wellsboro, Penn., has been appointed by John Price Jackson, who is State Commissioner of Labor and Industry, as chief of the Bureau of Mediation and Arbitration for the state of Pennsylvania, with a salary of \$3500 a year.

Mr. Gilday has been recently a part of the conciliation board of the United States Department of Labor. A worse choice than Patrick Gilday could well have been made. He is by no means an irreconcilable. He believes in the miners keeping their contracts and at a recent convention urged that both operators and miners be kept in line by the assessment of fines for violation of agreements. He is a warm advocate of education and believes the miners should help worthy applicants through State College.

In the Kanawha district, where he acted as conciliator with Charles W. Mills and A. L. Faulkner, for the United States Department of Labor, the commissioners showed no great amount of strength of mind, presenting as they did alternative bases for settlement. In the provision of one of these the check-off, which is generally regarded as illegal, was included. It was thought that Federal mediators would hardly recommend an arrangement which was at least of doubtful legality. It had been hoped that the report, by omitting this provision entirely, would tacitly condemn any such provision. However it left the question open by including it in one of the alternatives; and it must be admitted that the temporizing policy succeeded and one of the plans suggested was speedily accepted, and the strike was soon at an end. The operators thus conceded practically everything to the miners, including the bitterly opposed check-off.

### Strike Is Permanently Injuring Ohio

Last week we recorded the fact that the Sunday Creek Co. had announced its withdrawal from the Hocking Valley coal field. This withdrawal, while said not to be permanent, will continue until conditions become such that the field can be operated at a profit. This marks the final closing of 10 mines in what is known as the Hocking Valley Ry. side of the valley. In many cases the stocks in the company stores have been moved to the West Virginia field, denoting a complete abandonment of these commissaries for the present.

On the Toledo & Ohio Central Ry. side of the valley the Sunday Creek Co. is still operating three mines. These are No. 254 at Jacksonville, No. 301 at Congo and No. 266. In addition the company is still operating one of the San Toy



mines, located on the Baltimore & Ohio R.R. It is doubtful if even these mines will be operated for any length of time unless conditions in coal circles become better. It is generally believed that the mines will be closed in two or three weeks.

The company is devoting its operations largely to the West Virginia field, where labor troubles are not so frequent and where freight rates are more favorable. The property of the company in that field, which has been partially neglected for some time, is being put in shape for a large output. John H. Winder, general manager of the company, in speaking of the company's action, said: "These mines go down and they go down to stay until something is done for relief. We are not justified in operating these mines under present conditions."

Like many other Ohio corporations, the Maynard Coal Co., of Columbus, Ohio, having mines at Rutland, Meigs County, Ohio, near the Pomeroy Bend, is looking in an outside state for an opportunity for development and will establish a model operation in Perry County, Kentucky.

It is claimed that with the present discriminatory freight rates, the Ohio fields are unable to compete with the West Virginia, Kentucky and even with the Tennessee fields, where coal can be produced so cheaply that it can be placed in the Ohio market for even less money than Ohio coal costs to produce. The unfavorable legislation on the part of the Ohio General Assembly and its passage of the anti-screen law is also given as one of the causes for withdrawing from the state. The Sunday Creek Co. also declares that the prolonged strike in the Ohio fields has permitted the producers from West Virginia and Kentucky to invade, capture and keep the markets formerly held by Ohio coal.

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## Future of the American Mine Safety Association

The secretary, H. M. Wilson, of the American Mine Safety Association, under the instructions of the executive committee has presented to the members a choice of one of three courses. These are: To merge the association with the National Safety Council, to continue as a separate association with increased dues or to disband the association. The last plan is not easy, as the society is in debt.

The National Safety Council has a membership of 1300, with 3500 representatives—some members having more than one representative in the organization. The American Mine Safety Association is small in comparison with the body with which union is proposed, having only 44 associate members and 162 active members. The larger society is interested in safety, not only in mining, but in manufacture, railways, street cars, public places, in the insurance of employees and in other fields.

It has an assured income of approximately \$25,000, and this is increasing. The American Mine Safety Association has an income of \$1700. As a result while the mine society can pay its officers no salary whatever and is accumulating a perplexing debt, the National Safety Council is able to maintain a competent and well-paid secretarial and clerical office force at its Chicago headquarters. Its safety circulars are issued weekly instead of monthly, and it has 17 strong local branches in cities from Boston to San Francisco which are holding monthly meetings or rallies.

The Railway Safety Association has recently been merged as the Railway Section of the National Safety Council. Similarly the American Mine Safety Association is invited to affiliate itself as a Mining Section. The dues for 1915 will be unchanged, but after Jan. 1, 1916, membership will be renewed in the National Safety Council on its regular schedule of dues, which is \$1 for service members and \$5 for active members. The industrial members, corresponding to the associate

members of the American Mine Safety Association, will pay \$10 for 100 employees, \$15 for 250, \$25 for 1000 and \$100 for 10,000. Each \$5 of such dues paid will entitle a member to one additional representative and one set of service literature.

### WHAT COSTS LITTLE IS LITTLE VALUED

The American Mine Safety Association made the mistake of setting its dues too low, like many other societies. It was evaluated exactly at its own valuation. The fear to put institutional dues too low is always a grievous mistake. A business-man looks with suspicion on an association which demands \$10 a year and will even let him in at \$3, but which nevertheless assures him that it is doing a work worth twenty or more times the expenditure requested. He feels about the proposition as a man does who is offered a new hoist at one-third the recognized price. The appeal for a mere dole is met with suspicion, and it is likely that after the year is out he will not renew his subscription.

The safety movement is worth a great deal to miner and operator. The association has done much to fill the need of the hour. It would have done more had it been launched as boldly as the National Safety Council.

### MANY PERSONS WANTED A LARGER FIELD COVERED

There has been a feeling in Alabama that the American Mine Safety Association did not completely cover the field. It was argued in reply that to cover too large a field was to weaken its value, but Alabama operators persisted in their belief that the safety society which they favored should cover work at furnaces, in sawmills and factories and so they organized the Alabama Safety Association. There is evidence of other like secessions and duplications, and consequently the larger appeal of the National Safety Council is receiving careful consideration.

The Executive Committee, under art. 6 sec. 2 of the constitution, has called a meeting to convene in the offices of the secretary, at Sewickley, Penn., July 15, 1915. Voting will be by letter ballot.

## COMING MEETINGS

**The Order Kokoa** will hold its annual pow-wow at Chicago, Ill., July 13 and 14, 1915.

**Northwestern Retail Coal Dealers' Association** will hold its annual meeting July 15-16, 1915, at Minneapolis, Minn. Secretary, H. L. Laird, Minneapolis, Minn.

**The Southern Appalachian Coal Operators' Association** will hold its semiannual meeting July 23, 1915, at Knoxville, Tenn. J. T. McCoy, Knoxville, Tenn., is secretary.

**The American Mine Safety Association** will hold a meeting July 23-24, at Billings, Mont. Secretary, H. M. Wilson, 40th and Butler St., Pittsburgh, Penn.

**The United First-Aid Corps** of the 4th district, Delaware, Lackawanna & Western R.R. Co.'s coal department, will hold its third annual first-aid contest at Harveys Lake, Penn., on Aug. 14, 1915. Secretary, Lewis Richards, 212 East Green St., Nanticoke, Penn.

**The Somerset County Miners' First-Aid Meet** will be held at Boswell, Penn., Sept. 4. The names of the local committee follow: F. W. Cunningham, Somerset, Penn.; Samuel Steinbach, Somerset; Richard Maize, Jerome; John Gibson, Jr., Boswell; Ralph Zimmerman, Ralphon.

**The American Mining Congress** will hold its 18th annual session at the Exposition Memorial Auditorium, San Francisco, Calif., Sept. 20-22, 1915. J. F. Callbreath, secretary, Majestic Bldg., Denver, Colo.

## Editorials

### Why Are Coal Strikes of Such Frequent Occurrence?

Under this caption is discussed in this issue some of the causes which appear to one investigator to lead to discontent and strikes. He believes that the inequality in earnings around the mines is a constant source of irritation and that many men, frequently from no cause over which they have control, are earning less than a living wage, even where the mines at which they work run with reasonable steadiness.

With this argument it is necessary to differ. It is certainly not true of union mines, where most of the strikes occur. There are probably no mines operating under a scale in which the requirement is not made that the turn must be equalized. To ascertain this fact, reference has been carefully made to the eastern Ohio, Coshocton, Kanawha, Terre Haute, Des Moines, Wyoming, Du Bois and Pittsburgh agreements.

The clauses relating to the car turn in these contracts are not precisely similar. In some the turn must be squared every month, in others every week or every day. In some the turn must be proportioned for pick miners and machine loaders according to the wage rate per ton so that both can earn the same wage. The Ohio agreements, as far as investigated, require specifically that no free turns be given in room or entry. The Pittsburgh agreement is more elastic and says: "An equal turn shall be kept as far as practicable. This must not interfere with development or necessary work."

It is clear, then, that the equal turn is quite generally established in those mines which are frequently the scenes of strikes, and it is also true that the rule is always kept in a manner satisfactory to the union. That is, at the end of the period stipulated or even more often the miners are allowed to equalize the turn as set forth on the weigh sheets. Those who have had a shortage of cars are given a balancing excess if they so desire.

But the equal-turn rule is by no means as just as might at first appear, especially as it is administered. In Ohio it appears in an extremely crude fashion which declares openly for equality. In Indiana it is somewhat fairer and simply states that every miner shall be given an equal opportunity to load an equal turn. This makes it possible to refuse to give a man cars who has lost his right to them by leaving the mine early or by refusing to load them when offered.

Anyone who has been in a drift mine knows how often men leave early or arrive late and how frequently they refuse cars because they are not prepared to load them. Quite often the miner has a valid reason for refusing cars and the matter cannot be determined by the driver or the foreman. So in the long run the rule is to determine the right to cars by the weigh sheet. Thus the men who would work are held back so that the men who have not worked may receive the cars which they have previously refused. The equal turn is often unfair for this reason and reduces the output of the men.

But there is another inequality in the equal turn, and this acts directly, not only to reduce the average wage, but to create inequalities in earnings. A man who has an abnormal place, such as a heading, room neck or crosscut, a place with dirty coal, a room where the top or bottom must be ripped or a chamber with a bottom coal which lifts with difficulty gets pay for the disadvantages under which he works. He also gets the equal turn.

Consequently he gets more pay than the man with the absolutely normal place to whom is given only the regular tale of cars. He could load more and should do so as the conditions are favorable, but the inexorable law is equality of cars even where the result is far from an equality of earnings.

It is true, of course, that the inequalities are in themselves often quite fair. The entry driver should be better compensated than the miner, for he is usually a more skillful workman. But in other cases the rule works the other way, and the man drawing pillars, who is risking his life in a place not the safest, and who is a clever workman or he would not be trusted in such place, is paid no more for his services than the man who has just come to America and who consequently has been given the safest place imaginable where he is least likely to do any damage to himself or anyone else.

The equal turn with all its inequalities is a good provision and swept away many undoubted abuses of which the drivers and even the foremen were often guilty. Consequently the union cannot be blamed for enforcing it. The operator also has little cause to condemn it, because it puts a premium on work in undesirable parts of the mine and makes it easy to get them manned. If the work in difficult places was not a pure gain over and above what could be earned by filling the equal tale of cars—a sort of tip as payment for undesirable conditions—the operator would have to pay heavily for such work.

But this is not the only fault that can be found with the attitude of the writer of the article under consideration, for a protest should also be raised against an assumption too often made recently that because a loader could shovel 20 tons in a day such an output should be expected as an average from end to end of the country. There are places with low coal, where bottom has to be lifted, where shoveling is difficult or where double-shoveling is necessary. In others draw-slate falls and in still others the lifting of bottom coal takes time. In most cases the loaders have to drill their coal, load the holes and shoot them, and in all cases timber the roof and lay track. Furthermore if there was a driver at hand at all times there would be some loss of time at every exchange of empty for loaded cars.

The efficiency experts are faced with a difficult situation. Their work, owing to the operation of piece-work payments, is largely limited to transportation, powerhouse and dumping problems and in bituminous workings does not cover over 20 per cent. of the whole cost of mining. It is true that with more bosses the whole mining operation might be more efficiently handled, but as the operator is not the party most at interest he is unwilling



to cure the situation by decreasing his meager profits or increasing his losses, as the case may be.

It is doubtful in most cases whether he could save the cost of the additional bosses by the savings they would insure. More supervision often means more friction. In some cases this appears between bosses and men, and in other cases between the foremen employed. It is not infrequent to find the inside and outside mine foremen in ill-disguised antagonism.

But the efficiency expert is confronted with another difficulty. If he succeeds in getting more cars to the working faces he may find himself face to face with the prospect of a short day. He will find that the miners will all be at the baseball game in the afternoon when the drivers are trying to secure a trip. This is quite a frequent trouble, and one reason for the slow run of the drivers is frequently the fear that the boss will declare the run at an end after only six or seven hours. The gain of the miner thus injures the company man.

In short we can see scarcely any hope for improvement except in *motive*. If the workmen can be made to seek thrift, to recognize that productivity is a duty owed to the people at large, to realize their parts as cogs in the industrial wheel and understand that the machine will run ill if they do not interpose at the exact moment when their work is in demand, then we can get results. The duty of the operator to sell cheap coal is preached from the housetops; the obligation of the miner is not less obvious. There is no reason why he should not know that he is a citizen with obligations.

The hope of any industry is in the character of its men. If they are anxious to work, have a strong coöperative sense, use judgment and inventiveness, there is hope for success. But if they seek to do a minimum and if they find opportunities to block progress, no solution can be found for the evils from which the industry suffers, especially when men are paid by the piece. Of course there always remains the possibility that gang work may be introduced into mining. Then supervision will be easier and cheaper and personal responsibility may be felt in mining as it is in other industries which are closely supervised.

### Men and Machines

Every part of a machine is designed for a certain purpose. The purchaser is convinced that every unit in the design is placed in the machine to perform some definite work. If it does not do it, then the purchaser carefully tries to find out why, and if he finds or thinks he finds that something is wrong in design or assembling, he rights it or tries to do so. It is the recognized way in 1915. He knows no other, unless it be to telephone the manufacturer.

But it used not to be so—when a man bought a machine he believed that it was impossible that he could remedy its failings. He flung it away and rained imprecations on it as children will deal with a watch which won't run. That was many years ago, and somehow the idea has spread since then that a man who can't run a machine he has bought is a fit victim for raillery. That can be readily noted when a man is tinkering on his automobile or bicycle and cannot make it work. He is the sport of all those who can handle their machines successfully and more especially of those whose misfortune or luck it has been never to own a machine.

But the operator or manufacturer takes no such view of the human element in his machinery. He immediately condemns the shortcomings of the man who gives him trouble without scheming a way of preventing them. It has not yet come to the time when the discontent and strikes and incompetence of the employees are regarded as evidences of poor management. To an extent, that is what they are. They show that something has been wrongly handled and are evidence of our failure to control matters or there would be no "knock" in the operation of our engine.

The art of handling men, or of helping them to handle themselves, is the great art of management. The clever change in assembling which gives the most efficient use of steam in a cylinder is not more subtle than the tact which makes a mine work without friction.

The boy, Alexander Potter, who attached the valves to the walking beam so that he would not have to open them himself at every stroke of Watt's engine is a fit model for the manager, who should never try to create a machine in which he himself is an integral part, but one which will work well while he is not there and one which is so fittingly put together that it will control itself. He, like the boy, must build himself *out* of the machine.

A contrivance which will work without watching is the aim of the manufacturer. Such automaticity should be the object of the mine manager, and it can only be reached if he somehow succeeds in getting men of character or creating them from indifferent material. The work of a mine manager is to select and train men—not assistant managers and foremen only, but miners.

We have only just begun the work of training. We are at the early period of evolution; we have learned how to cast off and to imprecate our laboring men. But when are we really going to learn to adapt our labor as we would adapt a machine to our needs and ideals? When are we even going to assemble it according to the best principles and give every man the work which suits his mental makeup?

When at last we conclude that we are even more responsible for the organization we build up than for the machinery we buy, then will be completed that great work the starting of which characterizes the early part of the Twentieth Century. For want of a better term, this innovation is dubbed welfare work, which, being interpreted, is the art of preparing men for their duties.

### New Form of Coal Storage

It has been suggested that the mines which are operated by steam shovels can keep steadily at work regardless of the demand for coal by utilizing the dull months of the year—when there is no demand for domestic fuel—in partially stripping the cover from the coal, the operation of mining being completed with great rapidity as soon as the demand for coal makes the mining of it desirable.

In this way the coal does not in any way deteriorate. It is true that the stripping is made a little more difficult as it is harder to find a place for the material removed. Like all stocking at the mines, it is not desirable for the railroad. Transportation companies with limited equipment are not pleased to see facilities for meeting such demands, as it assures them of a large tonnage in the seasons when they are least able to handle it.

## Discussion By Readers

### Value of Coal Analyses

*Letter No. 2*—The inquiry of N. G. Near, COAL AGE, June 19, p. 1072, is one that many others interested in the coal industry have no doubt asked themselves many times. In entering upon this discussion I will state my viewpoint, which is that of a coal analyst who performs the tests and who is in a measure responsible for the correct interpretation of the results he obtains.

The uninformed coal-buying public do not seem to realize that the testing of their fuel should be done regularly, systematically and efficiently, not so much to find out that they are being imposed upon, but rather to show that they are imposing upon themselves. The value of coal analyses is such a vital question and of such growing importance that it is well worthy of a comprehensive discussion by mine operators, coal purveyors and consumers and the industry at large. The great practical importance of a coal analysis is in the control it exerts on the operations using this kind of fuel. Think of the constant repetition of analyses and routine chemical work done to determine the value of the output of metal and ore in steel and cement mills and metal mines. How long would these run nowadays without the guidance of the daily analyses of their materials and products?

The calorific determination of a fuel is a boiler-room necessity in plants using mechanical stokers and other modern combustion appliances. A slight variation in the composition of the coal would cause irregularities that in turn affect the entire plant. The cost of the analyses may at first seem high, but when carefully considered and apportioned among the different departments it is almost negligible in comparison with the benefit derived by so doing. In my own experience I have known times when an advance analysis of the fuel was a decided necessity and averted considerable worry and inconvenience, to say nothing of the loss of time in the operating schedule.

For the benefit of smaller consumers I would propose that it should be the office of the coal-sales agency to furnish analyses of all shipments of, say, 100 tons and over. A sales agency has the handling of perhaps several brands of coal from as many different districts, and it would be better to concentrate the analytical work in one well-equipped coal-testing laboratory, capable of taking care of a lot of combined work, instead of having a multitude of small and inefficient testing laboratories. To impose this duty of testing coal on the mine operator, as suggested by Mr. Near, is hardly just unless his commodity can be sold at an increased price. The operator's endeavors are centered on bringing the coal to the tippie in as good form and as uniform as his seam of coal and operating conditions will permit. It should be the duty of the sales agency to exploit the quality of the coals it offers on the market, substantiating the claims by reliable analyses.

It is possible to show how fuel can be saved by securing greater efficiency in power plants only by knowing the purity and character of the coal. The evaporation or

boiler test indicating a lack of efficiency in any given plant is of no value unless we know the calorific value of the coal used in the test. Accordingly if we wish to know the daily efficiency of a boiler-room equipment we must have the daily routine laboratory tests. If we wish to be thorough and scientific in the conversion of the energy of coal into power, we must pay for it. In the study of engine-room chemistry we must first become thoroughly acquainted with the composition and properties of the coal, and this can only be ascertained by analyses.

BYKEM.

—, Ill.

### Longwall vs. Room-and-Pillar Mining

*Letter No. 1*—I have read with interest the articles on longwall mining that have recently appeared in COAL AGE. None of these letters, however, has gone far enough to indicate the advantage of this system of mining over the room-and-pillar system.

The discussion in COAL AGE has aroused a controversy here between the adherents of these two systems of mining. The room-and-pillar advocates claim that their system can be safely adopted under all conditions, while the longwall plan is limited and confined to localities that have a hard roof and bottom and cannot therefore be safely adopted anywhere and everywhere.

If these claims be true, it must be acknowledged that there is little encouragement to experiment with the longwall system of mining, which must hold out at least a promise of decided advantages over the other systems in order to make such experiments worth while and of interest to mining men.

The longwall advocates, on the other hand, claim that the average cost of coal production in Iowa and Missouri, by the room-and-pillar system of mining, is \$1.40 per ton and that 60 per cent. of lump coal is produced, the remaining 40 per cent. of the output being screenings. They contrast this cost of production under the room-and-pillar system with a cost of from \$1.20 to \$1.25 per ton under the longwall system of mining in the same states, which they say yields 90 per cent. of lump coal.

As a result of this controversy a little dinner is at stake, and it has been decided to submit the question to COAL AGE for its decision as to who shall pay for the dinner. The question to be decided is, Has the longwall system the indicated advantage over the room-and-pillar system of mining, assuming that the physical conditions in the seam will admit of the adoption of the former method.

FRED MORCK.

Tuscaloosa, Ala.

[In response to the above request, we would suggest that it would be manifestly unfair for COAL AGE, not having heard the arguments presented, to decide the question, as to who shall pay for the dinner. We would suggest



that the advocates of both of these systems of mining present their arguments for discussion in COAL AGE. Such a discussion would be of great interest to all readers and would probably be a greater benefit to the advocates of both systems than the proposed dinner. It may be stated with assurance, however, that where the conditions are favorable, longwall work properly conducted will fully justify the claims here presented.—EDITOR.]

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### Stopping Payroll Leaks

*Letter No. 5*—Some very interesting points were brought out by H.R.K., in Letter No. 4, COAL AGE, June 3, p. 990. The conditions named in that letter are very close to those under which we are working at the present time in our mines. We are recovering ribs and stumps that have been standing from two to six years. The work entails much expense that could have been saved had it been done at the proper time.

I want to mention another source of expense that can often be avoided by a little foresight and judgment on the part of the foreman. It often happens that the roof slate in a mine is weak and troublesome in spots. When this is the case, the usual practice or custom is to timber the entry through such places. This is done as a matter of course, without giving a thought to the question of the relative cost of timbering such a stretch of roadway and that of taking down the loose top and removing from the mine what is not needed for building the stoppings in the crosscuts. When the roof slate is overlaid with a hard rock or shale, it will generally be found much cheaper to take it down than to secure it with timber.

In my experience I have often asked myself the question, Does it pay to timber such places? and I have invariably come to the conclusion that it does not. In most cases it will be found that the cost of securing such dangerous spots in an entry by suitable timbering would more than pay for removing the loose material, and in addition there would be secured a permanent good roof, while the expense of renewing timber from time to time as required would be avoided.

It often happens that it is impracticable to take down such bad roof in an entry, as for example under shallow covering or where the roof slate is overlaid with soft material that would "cut." These cases, however, are comparatively few in many coal-mining districts. In the mine where I am at present employed the roof conditions are generally good, but soft spots occur at different points. There is the ordinary drawslate with from 8 to 10 in. of roof coal, above which is a black slate resembling a soft soapstone and varying from 1 to 8 ft. in thickness. It is this stratum that causes the trouble when it becomes soft or tender as it does in places.

A short time ago I had occasion to handle one of these soft spots in a butt entry where the roof had been timbered five years before. The work on this entry was being drawn back, and the entry pillars and stumps had been removed to within 300 ft. of the main-entry pillar. At this point the roof between the main entry and the first room became dangerous, and it was necessary to remove the entire loose material by placing a stick of carbonite on the end of a timber set. The shot blew out seven sets of 10x10 timber, and from 30 to 35 tons of slate came down. To remove this material required the work of two men for 17 hr., making a total of 34 hr. at

32.5c. per hr., costing \$11.05. This did not include the cost of haulage and dumping the material, which was a matter of little moment in this case as the facilities for handling the dirt were excellent.

Compare this with the original cost of timbering this place. Each set of timber consisted of two 7-ft. legs and one 8-ft. cap of heavy 10x10-in. sticks. These were oak-lagged with old props reinforced with four 40-lb. steel rails. It may be estimated that the work of setting these timbers would require seven days for two men at \$2.60 per day, making a total of  $14 \times 2.60 = \$36.40$ . To this must be added the cost of the timber, say \$3 per set, or \$21 making the total cost \$57.40. If this material had been removed at the start, the expense of removal would have been \$11.05, as given; but owing to its having been timbered and later removed, the total expense was the cost of the timbering and its later removal. In other words, the cost of the timbering and the material used (\$57.40) would have been saved by a little foresight or judgment.

In the development of a mine it will often happen that there are met a number of such places where the same saving of expense, or even a larger amount, can be effected by removing the loose material at once instead of attempting to secure these places with timber. Where timber is used, it must be remembered that it will be necessary to replace much of it before the road is abandoned. The work of retimbering a road will often exceed the original cost of setting the first timbers, as in many cases heavier timbers will be required.

F. M.

Meadowlands, Penn.

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### Rail vs. Water Freights to Pacific Coast

Referring to the inquiry of H. C. Marchant, sales manager for the Lion Coal Co., which raises some interesting questions, I would offer the following suggestions:

Competition of Wyoming and Utah coals for the North Pacific coast trade involves other questions than the mere cost of shipping and delivering of coal from the Atlantic States to the Pacific Coast. The points necessary to be considered may be summed up as follows:

1. The tonnage involved, depending on the consumption of coal in the U. S. Pacific coast markets.
2. The coals competing for this trade, their source, quality, availability and cost.
3. The cost of each coal at points of consumption.
4. The method and cost of handling, discharge and delivery from ship or cars.
5. The competition of other fuels with coal.

On these various points, I offer the following as the best information available at the present time:

1. Government reports, trade statistics and other like sources give an approximate idea of the consumption of coal along the United States Pacific Coast, at least as far as covering the most important markets. This information may be summarized as follows:

San Francisco—The receipts of coal, in 1914, totaled 373,095 tons, derived from the following sources:

Foreign countries: British Columbia, 97,598 tons; Australia, 123,050 tons; Japan, 25,077 tons; Great Britain, 13,421 tons; China, 1000 tons.

Home supply: Washington, 12,637 tons; Oregon, 73 tons; East, by rail and water, 100,239 tons.

This shows a total of 260,146 tons, or 69.7 per cent. of the total coal consumption as coming from abroad, while only 112,949 tons is supplied by home operations, and 60,000 tons of the last item was used by the United States Navy.

The coal consumption of San Francisco has steadily decreased from 593,164 tons in 1911. This decline began in 1900 when the consumption was nearly two million tons.

Portland—The coal consumption of Portland amounts to about 100,000 tons per year, the coal coming mostly from Washington, Wyoming, Utah and British Columbia. Wood and oil are strong competitors for fuel in this market.

Seattle—The receipts of coal by water at Seattle, during 1914, amounted to 45,113 tons from British Columbia, 473 tons from Alaska, and 4730 tons from the Atlantic Coast. Oil is a strong and growing competitor here also.

Since the first of the year there have been a number of cargoes of coal shipped to the Pacific Coast, including two cargoes of anthracite; but most of this coal has been for the use of the navy, which is increasing its supplies of coal at the naval stations.

Whether the opening of the Panama Canal will enable Atlantic Coast coals to compete to any extent for the North Pacific markets is very doubtful, unless ocean freights are materially reduced.

It is likely that the imports of Australian coal will be considerably reduced during this year and this would afford an additional opportunity for the Wyoming and Utah coals to reach the Pacific Coast.

2. In an article published in COAL AGE, Vol. 5, pp. 888 and 1003, entitled "Effect of Panama Canal on World's Coal Markets," I gave some analyses of competitive coals on the Pacific Coast, which may be used here:

|                    | Moisture | Volatile | Fixed Carbon | Ash   | Sulphur | B.t.u. |
|--------------------|----------|----------|--------------|-------|---------|--------|
| Australian.....    | 1.32     | 40.47    | 52.58        | 5.63  | 1.23    | 14188  |
| Australian.....    | 2.01     | 36.01    | 58.27        | 8.71  | 0.47    | 13300  |
| Japan, Chikubo.... | 4.21     | 42.92    | 45.71        | 7.33  | 0.68    | 12965  |
| Vancouver Islands. | 1.16     | 40.47    | 50.04        | 7.80  | 0.53    | 13410  |
| Vancouver Islands. | 1.00     | 29.00    | 57.20        | 11.90 | 0.90    | 13010  |
| British Columbia.. | .....    | 26.30    | 64.70        | 9.00  | 0.50    | 13820  |
| British Columbia   |          |          |              |       |         |        |
| (washed coal)....  | .....    | 25.20    | 68.60        | 6.20  | 0.50    | 14310  |
| Best New River.... | 1.107    | 20.50    | 73.37        | 4.96  | 0.828   | 15033  |
| Washington, Ren-   |          |          |              |       |         |        |
| ton.....           | .....    | 38.54    | 48.19        | 13.27 | 0.84    | 11911  |
| Washington, Ros-   |          |          |              |       |         |        |
| lyn.....           | .....    | 36.76    | 50.36        | 12.88 | 0.36    | 13056  |
| Washington, Car-   |          |          |              |       |         |        |
| bonado lump.....   | .....    | 35.65    | 53.26        | 11.09 | 0.71    | 13480  |
| Utah, Castlegate.. | .....    | 42.69    | 48.41        | 8.90  | 0.60    | 13014  |
| Utah, Kenilworth.. | .....    | 42.70    | 52.32        | 4.98  | 0.33    | 13590  |
| Utah, Winterquar-  |          |          |              |       |         |        |
| ters.....          | .....    | 43.75    | 49.96        | 6.29  | 0.94    | 13237  |
| Wyoming, Dietz.... | .....    | 40.91    | 52.58        | 6.51  | 0.97    | 12328  |
| Wyoming, Mon-      |          |          |              |       |         |        |
| arch.....          | .....    | 46.05    | 49.63        | 4.32  | 0.77    | 12559  |
| Wyoming, Sheri-    |          |          |              |       |         |        |
| dan.....           | .....    | 47.00    | 45.02        | 7.98  | 1.08    | 11599  |
| Wyoming, Superior  | .....    | 36.55    | 58.58        | 4.87  | 1.51    | 13250  |

The availability of any of these coals for the Pacific Coast trade depends wholly on the nature of the intended use. It must also be remembered that there is likely to be some anthracite shipped from the East and that there has always been a trade in smithing coals from the Atlantic seaboard, mostly in Georges Creek coal.

3. No data on freight rates from Wyoming and Utah points to the Pacific Coast are available. The present price of Eastern coals, New River and Pocahontas, for tidewater shipment is \$2.85 per gross ton, f.o.b. Hampton Roads, although this price can be shaded probably, as the Navy Department has just closed a contract for Pocahontas coal at \$2.60, f.o.b. tidewater, the rail freight from

the mines being \$1.40. Ocean freight rates from Atlantic Coast ports to North Pacific ports are very high now, as might be expected. Charters made during the last three months run from \$6.46 to \$7, while a year ago they were as low as \$3.39 per ton.

4. No data are available regarding the relative cost of handling rail and water shipments at San Francisco or other Pacific ports.

5. The competition of oil as fuel has greatly reduced coal consumption on the Pacific Coast, so much so that practically the only market for coal is the domestic market and the foreign bunker trade, and even the latter has been considerably decreased of late years.

The United States Geological Survey estimated that at the close of 1913 the consumption of fuel oil in markets tributary to the Washington coal mines has displaced 5,000,000 tons of coal. It was also estimated that to perform the service rendered by California petroleum in the production of heat and power and in making gas it would require about 18,000,000 tons of coal.

In Western Oregon, generally, wood is the principal fuel for all purposes. At Portland oil is the fuel used for steam and gas making, wood being used for domestic heating. Good cordwood can be bought in this section as low as \$3.75 per cord and slabs from the lumber mills at \$2.25.

It is obvious from the above that the coal markets on our Pacific Coast are not large and will not be until oil production is materially decreased and its price for fuel increased. Under any circumstances, the Wyoming and Utah coals will find it difficult to compete with Australian and British Columbia coals, unless the exports of the two latter sources of supply are materially decreased by the present war or unless rail freights on the inland coals are cut down to a competitive point. The Vancouver coals for instance have but 940 statute miles of water transportation to San Francisco, while from Ogden to San Francisco is 786 miles by rail. In normal times the Vancouver coals sell for \$6.90 trimmed in bunkers. The Australian coal, although coming from a great distance, is carried very cheaply.

I have no data as to freights between Australia and San Francisco, but Australian coal freights to Valparaiso, Chile, a distance of 6280 nautical miles, have been as low as \$4.25 (1914), and the Chilean railways contract for 1915 was taken at \$7.66 per metric ton for Australian coal. As the distance from Australia (Melbourne) to San Francisco is 6966 miles, it would seem that Australian coal can be sold there at about as low a price as in Chile.

As regards competition of Atlantic Coast coals, it is the writer's opinion that not much effort will be made by coal agencies in the East to enter the North Pacific markets, except for navy business. At the present ocean-freight rates, they cannot compete; and even when freights are low, they would have difficulty in competing with the British Columbia coals. Of course this does not apply to coals for special purposes, such as blacksmith and anthracite. The competition of Alaska coals in the Pacific markets outside of Alaska, about which so much was said a few years ago, need not be taken seriously and is not likely to amount to anything, owing to mining and transportation difficulties and costs.

F. R. WADLEIGH.

Philadelphia, Penn.



## Reducing Ventilation When Firing in Mines

Letter No. 2—Referring to Alexander McAllister's letter, COAL AGE, June 19, p. 1070, on this subject, I would like to ask him to tell us how a current of air is to be forced into an entry "under pressure" when the entry is "open at both ends."

I have had considerable experience in fighting mine fires and working in all kinds of contaminated air in mines. I have never, however, observed such a phenomenon as Mr. McAllister describes—a column of pure air in the center of an entry and surrounded by afterdamp. I believe there are other factors that exert a greater influence on the distribution of the air in the sectional area of an entry than the friction against the roof, floor and ribs of the entry.

For example, if the temperature of the air in the mine is high as a result of a fire or local explosion, and the outside temperature is low owing to cold weather, the fresh cold air entering the mine will flow along the floor of the entry, until it gradually becomes warmer and mixes with the other air or forces it ahead. This is especially the case where the air current is not sufficiently strong to force the dead air of the entry ahead, as often happens in time of emergency.

But, again, on a warm summer day a small intake current of fresh warm air will generally be found to flow along the roof of the entry, and this will be particularly manifest where the air in a mine has been standing and is cool, and especially when the mine air is laden with carbon dioxide or blackdamp. I have frequently observed both of these conditions.

While admitting that reducing ventilation when firing in a mine will no doubt lessen the magnitude of an explosion should one occur, I cannot believe that such procedure will prevent an explosion from taking place when other conditions favor its occurrence. It is important to remember in this connection that, in a mine generating large volumes of firedamp, any reduction of the ventilation will allow enough explosive gas to accumulate in a brief time to cause an explosion when ignited by the flame of a blast.

My conclusion is, therefore, that the question of reducing ventilation at firing time must be determined by the condition of the mine in respect to firedamp. I may be pardoned for stating that, in my humble opinion, Mr. McAllister may yet have an explosion under the same conditions that he now claims render the mine immune from such an occurrence.

EDWARD H. COXE.

Knoxville, Tenn.

# Study Course in Coal Mining

By J. T. BEARD

### The Coal Age Pocket Book

At each change of state in matter heat is either absorbed and becomes latent in the mass, or is given out and becomes sensible, causing a rise of temperature in the surrounding medium. Heat is absorbed when a solid becomes a liquid or a liquid becomes a gas, the change being one in which the density of the mass is made less. On the other hand, heat is given out when a gas is condensed to a liquid or a liquid to a solid, the density of the mass being then increased.

**Heat of Fusion**—The change from a solid to a fluid state is described as "liquefaction" when solution takes place, or "fusion" if the solid is melted. The heat absorbed in the latter case is called "heat of fusion."

**Liquefaction** may take place as the result of the absorption of moisture from the air, the substance dissolving either wholly or in part in the water absorbed. Such a substance is said to be "deliquescent."

**Solution** takes place when a solid disappears in a liquid in which it is immersed. The solid is "dissolved" in the liquid, which is called the "solvent."

In any case of liquefaction or fusion heat is absorbed and becomes latent in the liquid, causing a seeming loss or disappearance of heat. When a solid is dissolved in a liquid the liquid is cooled provided no chemical reaction takes place, which might produce heat.

**Heat of Vaporization**—The formation of vapor or the change from a solid or liquid to a gaseous state is known as "vaporization" and the heat absorbed and rendered latent in the vapor is called "heat of vaporization" or frequently "heat of evaporation," especially when the vapor is formed by boiling the liquid.

**Heat of Condensation**—When a gas or vapor is condensed to a liquid or a liquid is frozen or condensed to a solid the latent heat of the gas, vapor or liquid is given out and appears as sensible heat, which causes a rise of temperature. The heat given out is called "heat of condensation" and is exactly equal to the heat of vaporization or the heat of fusion or liquefaction, as the case may be.

**Total Heat in a Body**—By this is meant the total heat absorbed by a body in a given change of temperature or state. For example, the total heat in 1 lb. of water, in passing from ice at 32 deg. F. to steam at 212 deg. F. is as follows:

Latent heat of fusion of ice, from and at 32° F..... 144 B.t.u.  
Sensible heat absorbed by water, 32° to 212° F..... 180 B.t.u.  
Latent heat of vaporization, from and at 212° F..... 966 B.t.u.

Total heat absorbed ..... 1290 B.t.u.

The total heat of steam at any temperature or pressure is usually estimated from water at 32 deg. F.; thus the total heat in steam (water vapor) at 212 deg. F. is 180 + 966 = 1146 B.t.u. This is the heat in steam at atmospheric pressure at sea level (14.7 lb. per sq.in.). When steam is generated in a boiler, its temperature increases with the pressure.

### The Coal Age Pocket Book

TABLE SHOWING CORRESPONDING VALUES OF THE FAHRENHEIT SCALE, FOR EACH FIVE DEGREES OF THE CENTIGRADE SCALE

| C.  | F.  | C.  | F.  | C.  | F.   | C.  | F.   | C.   | F.   |
|-----|-----|-----|-----|-----|------|-----|------|------|------|
| -50 | -58 | 200 | 392 | 450 | 842  | 700 | 1292 | 950  | 1742 |
| -45 | -49 | 205 | 401 | 455 | 851  | 705 | 1301 | 955  | 1751 |
| -40 | -40 | 210 | 410 | 460 | 860  | 710 | 1310 | 960  | 1760 |
| -35 | -31 | 215 | 419 | 465 | 869  | 715 | 1319 | 965  | 1769 |
| -30 | -22 | 220 | 428 | 470 | 878  | 720 | 1328 | 970  | 1778 |
| -25 | -13 | 225 | 437 | 475 | 887  | 725 | 1337 | 975  | 1787 |
| -20 | -4  | 230 | 446 | 480 | 896  | 730 | 1346 | 980  | 1796 |
| -15 | +5  | 235 | 455 | 485 | 905  | 735 | 1355 | 985  | 1805 |
| -10 | 14  | 240 | 464 | 490 | 914  | 740 | 1364 | 990  | 1814 |
| -5  | 23  | 245 | 473 | 495 | 923  | 745 | 1373 | 995  | 1823 |
| 0   | 32  | 250 | 482 | 500 | 932  | 750 | 1382 | 1000 | 1832 |
| +5  | 41  | 255 | 491 | 505 | 941  | 755 | 1391 | 1005 | 1841 |
| 10  | 50  | 260 | 500 | 510 | 950  | 760 | 1400 | 1010 | 1850 |
| 15  | 59  | 265 | 509 | 515 | 959  | 765 | 1409 | 1015 | 1859 |
| 20  | 68  | 270 | 518 | 520 | 968  | 770 | 1418 | 1020 | 1868 |
| 25  | 77  | 275 | 527 | 525 | 977  | 775 | 1427 | 1025 | 1877 |
| 30  | 86  | 280 | 536 | 530 | 986  | 780 | 1436 | 1030 | 1886 |
| 35  | 95  | 285 | 545 | 535 | 995  | 785 | 1445 | 1035 | 1895 |
| 40  | 104 | 290 | 554 | 540 | 1004 | 790 | 1454 | 1040 | 1904 |
| 45  | 113 | 295 | 563 | 545 | 1013 | 795 | 1463 | 1045 | 1913 |
| 50  | 122 | 300 | 572 | 550 | 1022 | 800 | 1472 | 1050 | 1922 |
| 55  | 131 | 305 | 581 | 555 | 1031 | 805 | 1481 | 1055 | 1931 |
| 60  | 140 | 310 | 590 | 560 | 1040 | 810 | 1490 | 1060 | 1940 |
| 65  | 149 | 315 | 599 | 565 | 1049 | 815 | 1499 | 1065 | 1949 |
| 70  | 158 | 320 | 608 | 570 | 1058 | 820 | 1508 | 1070 | 1958 |
| 75  | 167 | 325 | 617 | 575 | 1067 | 825 | 1517 | 1075 | 1967 |
| 80  | 176 | 330 | 626 | 580 | 1076 | 830 | 1526 | 1080 | 1976 |
| 85  | 185 | 335 | 635 | 585 | 1085 | 835 | 1535 | 1085 | 1985 |
| 90  | 194 | 340 | 644 | 590 | 1094 | 840 | 1544 | 1090 | 1994 |
| 95  | 203 | 345 | 653 | 595 | 1103 | 845 | 1553 | 1095 | 2003 |
| 100 | 212 | 350 | 662 | 600 | 1112 | 850 | 1562 | 1100 | 2012 |
| 105 | 221 | 355 | 671 | 605 | 1121 | 855 | 1571 | 1105 | 2021 |
| 110 | 230 | 360 | 680 | 610 | 1130 | 860 | 1580 | 1110 | 2030 |
| 115 | 239 | 365 | 689 | 615 | 1139 | 865 | 1589 | 1115 | 2039 |
| 120 | 248 | 370 | 698 | 620 | 1148 | 870 | 1598 | 1120 | 2048 |
| 125 | 257 | 375 | 707 | 625 | 1157 | 875 | 1607 | 1125 | 2057 |
| 130 | 266 | 380 | 716 | 630 | 1166 | 880 | 1616 | 1130 | 2066 |
| 135 | 275 | 385 | 725 | 635 | 1175 | 885 | 1625 | 1135 | 2075 |
| 140 | 284 | 390 | 734 | 640 | 1184 | 890 | 1634 | 1140 | 2084 |
| 145 | 293 | 395 | 743 | 645 | 1193 | 895 | 1643 | 1145 | 2093 |
| 150 | 302 | 400 | 752 | 650 | 1202 | 900 | 1652 | 1150 | 2102 |
| 155 | 311 | 405 | 761 | 655 | 1211 | 905 | 1661 | 1155 | 2111 |
| 160 | 320 | 410 | 770 | 660 | 1220 | 910 | 1670 | 1160 | 2120 |
| 165 | 329 | 415 | 779 | 665 | 1229 | 915 | 1679 | 1165 | 2129 |
| 170 | 338 | 420 | 788 | 670 | 1238 | 920 | 1688 | 1170 | 2138 |
| 175 | 347 | 425 | 797 | 675 | 1247 | 925 | 1697 | 1175 | 2147 |
| 180 | 356 | 430 | 806 | 680 | 1256 | 930 | 1706 | 1180 | 2156 |
| 185 | 365 | 435 | 815 | 685 | 1265 | 935 | 1715 | 1185 | 2165 |
| 190 | 374 | 440 | 824 | 690 | 1274 | 940 | 1724 | 1190 | 2174 |
| 195 | 383 | 445 | 833 | 695 | 1283 | 945 | 1733 | 1195 | 2183 |

## Inquiries of General Interest

### Ventilation Problem

I desire to submit a problem in mine ventilation that has given us considerable anxiety in reference to the future development of the mine where I am employed. Our proposition is somewhat peculiar because of the fact that the property is only 1400 ft. wide, while the coal is thin, varying from 21 to 24 in. in thickness. The mine has been developed by driving a pair of main entries through the center of the property and turning cross-entries at right angles to the main entries every 300 ft.

At the present time the first pair of cross-entries is at a distance of 4500 ft. from the shaft. We aim to keep 5 pairs of cross-entries open on each side of the main entry, making 10 pairs of cross-entries, each pair being 700 ft. long when driven to the boundary. The main entries are practically 6000 ft. long from the shaft to the face. All the entries are 5x6 ft. in section, giving a sectional area of 30 sq.ft.

In the ventilation of this mine it has been our custom to obstruct the main intake current at the mouth of each pair of cross-entries, so as to circulate from 3000 to 4000 cu.ft. per min. in each pair of these entries. Owing to the narrowness of the property and the thinness of the seam, it is impracticable to build overcasts and split the air current. For this reason the mine is ventilated by a single continuous current that passes through the main intake from the shaft to the face and returns through the main return air course to the upcast, a sufficient scale of air being taken off this main current for the ventilation of each pair of cross-entries, as previously mentioned. From this description it will be seen that the total length of the main current, including the return, is 12,000 ft., the sectional area 30 sq.ft., and the rubbing surface 264,000 sq.ft. The 10 pairs of cross-entries represent a total length of approximately 14,000 ft., with a sectional area of 30 sq.ft. and a rubbing surface of 308,000 sq.ft.

The present circulation of air is insufficient for the satisfactory ventilation of the workings, and I want to ask what the maximum quantity of air is that can be circulated on this plan under a 6-in. water gage; also, what you can advise as the best method of handling this proposition in order to get a circulation of 20,000 cu.ft. of air per min. in the mine.

ALEXANDER JEFFREY.

Bay City, Mich.

In attempting to answer this question, it is well to estimate approximately what circulation of air will be produced by a 6-in. water gage under the plan described by the correspondent. Not knowing definitely the character of the mine in respect to the straightness of its airways, their condition and the amount of timber employed, we will use the modified Atkinson coefficient,  $k = 0.00000002$ , which will be safer under the circumstances than the Fairley coefficient,  $k = 0.00000001$ . We will assume a scale of 3600 cu.ft. per min. passing through each

pair of cross-entries and returning directly to the main current. The total pressure absorbed by the circulation in the 10 pairs of cross-entries, on this basis, is

$$p = \frac{0.00000002 \times 308,000 \times 120^2}{30} = 2.95 \text{ lb. per sq.ft.}$$

A 6-in. water gage corresponds to a pressure of  $6 \times 5.2 = 31.2$  lb. per sq.ft. Hence, assuming a 6-in. water gage for the entire circulation in the mine, the pressure producing the circulation in the main entries is  $31.2 - 2.95 = 28.25$  lb. per sq.ft. The quantity of air this pressure will circulate in the main entries is

$$q = 30 \sqrt{\frac{30 \times 28.25}{0.00000002 \times 264,000}} \\ = \text{say } 12,000 \text{ cu.ft. per min.}$$

The practical aspect of the problem would suggest, first, to clean up all airways, enlarge breakthroughs and straighten air courses and wherever possible shorten the distance of air travel by carrying the air through rooms that have holed into each other from adjacent pairs of cross-entries. Aside from these suggestions, however, if the quantity of air in circulation is still insufficient for the thorough ventilation of the mine, the best solution of the problem will be found in sinking an air shaft at or near the head of the main entries. This would make it possible to use both the main entries as intake air courses for their respective sides of the mine. In other words, it would then be possible to ventilate each side of the mine with a separate air split, coursing the air through consecutive pairs of cross-entries, as before, in each split. The pressure required to circulate 20,000 cu.ft. of air through the main entries from the downcast to the upcast shaft at the face, a distance of 6000 ft.—the total sectional area, or area of passage, being then 60 sq.ft. and the total perimeter, 44 ft., which makes the rubbing surface as before  $6000 \times 44 = 264,000$  sq.ft.—is

$$p = \frac{0.00000002 \times 264,000 \times 20,000^2}{60^3} = 9.77 \text{ lb. per sq.ft.}$$

For better ventilation of the cross-entries, we will now assume a velocity of the air current in these entries equal to 300 ft. per min., giving a scale of air of  $300 \times 30 = 9000$  cu.ft. per min. in each pair of cross-entries. Since the air is traveling in two separate splits, it is only necessary to calculate the pressure for five cross-entries on one side of the mine, which have a sectional area of 30 sq.ft. and a rubbing surface of 154,000 sq.ft. Hence, the pressure absorbed in the circulation of 9000 cu.ft. per min. in each pair of cross-entries is

$$p = \frac{0.00000002 \times 154,000 \times 9000^2}{30^3} = 9.24 \text{ lb. per sq.ft.}$$

The total pressure required in this circulation is therefore  $9.77 + 9.24 = \text{say } 19$  lb. per sq.ft., which corresponds to a water gage of  $19 \div 5.2 = 3.6$  in. In this calculation, we have disregarded the resistance of the shaft, which would have to be taken into account if of any considerable depth or limited in sectional area.



## Examination Questions

### Illinois Examination for Mine Managers, June 14, 1915

(Selected Questions)

**Ques.**—The hammer of a piledriver weighs 20 cwt. and reaches the pile with a velocity of 30 ft. per sec.; find the kinetic energy.

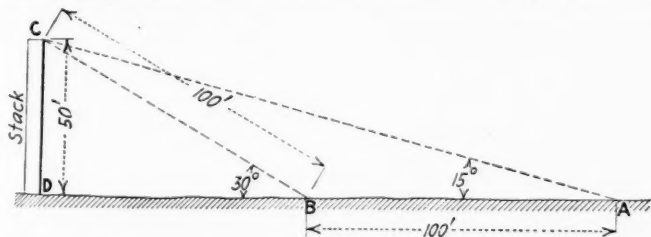
**Ans.**—The kinetic energy of a moving body is one-half the product of the mass of the body and the square of its velocity expressed in feet per second. The mass of a body is equal to its weight divided by the force of gravity expressed in feet per second. Taking the force of gravity as  $g = 32.16$  ft. per sec., the kinetic energy is

$$\text{Kinetic energy} = \frac{2000 \times 30^2}{2 \times 32.16} = 27,985 \text{ ft.-lb. per sec.}$$

**Ques.**—The angular height of a stack was found to be 15 deg., and at a point 100 ft. nearer it was observed to be 30 deg. What is its actual height?

**Ans.**—Assuming that these observations are taken from points having the same elevation, the line joining the two points of observation is the base of a triangle in which one side and all its angles are known.

Referring to the accompanying figure, the side  $AB$  of the triangle  $ABC$  is 100 ft. The interior angle  $A$ , being



the point of observation farthest from the stack, is 15 deg., while the exterior angle of the triangle at  $B$ , or the point of observation nearer to the stack, is 30 deg.; and since this exterior angle is equal to the sum of the two opposite interior angles of the triangle  $ABC$ , the angle formed by the two sight lines at the top of the stack at  $C$  is  $30 - 15 = 15$  deg. Hence the triangle  $ABC$  is isosceles, having two equal angles, and the side  $BC$  is equal to the side  $AB$ , or 100 ft.

Finally, the vertical stack, indicated by the line  $DC$ , is the altitude of a right triangle whose hypotenuse is 100 ft. and the angle at the base 30 deg. The altitude of this triangle, or the height of the stack, is then one-half the hypotenuse, or 50 ft., since the sine of 30 deg. is 0.5, or one-half.

**Ques.**—What is the accepted theory as to the origin of coal? Assuming this theory to be correct, how do you account for the successive coal measures, one above the other, in this state?

**Ans.**—The generally accepted theory of the formation of coal is that the material constituting the coal measures was deposited on the surface in more or less level and consecutive layers. The material forming the coal beds was chiefly of vegetable origin, the result of successive

seasons of vegetable growth and decay. Owing to internal or geological changes taking place in the earth's crust, there were successive risings and sinkings of the surface, which caused the successive inundation of different surface areas.

The deposits of vegetable matter were thus overflowed, and in this stage of the formation became covered with various other deposits of sand, limestone, clay and gravel or drift that often formed a conglomerate. The limestone was deposited from the calcareous matter carried in solution by the water that overflowed the area. These strata all contain fossils, which are the petrified remains of the bones of animals and different plants.

Other geological changes following caused the uprising of such flooded areas, which were again covered with a luxuriant vegetable growth that later deposited more coal-forming material. These successive geological changes made possible the successive deposition of the material forming the coal beds and the interstratified layers of rock, shale, sandstone, clay and conglomerate which form the coal measures. Other geological changes tilted the formations so that many of the beds are now inclined. The same changes exposed portions of the beds to erosion by surface streams and glaciers and caused many faults and displacements.

**Ques.**—What is the displacement or theoretical delivery in imperial gallons per minute of a three-ram pump, at a speed of 30 r.p.m., if the rams are 10 in. in diameter and have a stroke of 12 in.? If such a pump can empty a sump in 15 hr., after having been idle for 10 hr., what is the rate of inflow of water into the sump in imperial gallons per minute?

**Ans.**—The imperial gallon contains 277.274 cu.in., being larger than the U. S. standard or Winchester gallon, which is 231 cu.in. A pump having three plungers and running at a speed of 30 r.p.m. makes  $3 \times 30 = 90$  strokes per min., assuming this style of pump is single-acting in its operation. The theoretical displacement is then  $90 (0.7854 \times 10^2) 12 \div 277.274 = \text{say } 306 \text{ gal. per min.}$

Assuming the sump was empty at the beginning of the 10 hours' idleness of the pump and that the latter could handle in 15 hours what ran into the sump in 10 hours, and allowing a slip of 15 per cent., or making the water-end efficiency of the pump 85 per cent. of the theoretical displacement, the inflow into the sump in imperial gallons is  $306 \times 0.85 \times 15 \div 10 = 390 + \text{gal. per min.}$

**Ques.**—Given an arched airway, with semicircular arch 10 ft. in diameter, springing 5 ft. above the floor, and a velocity of air current equal to 500 ft. per min., what is the quantity of air passing in cubic feet per minute.

**Ans.**—The area of the rectangular portion of this cross-section is  $5 \times 10 = 50 \text{ sq.ft.}$  To this must be added the area of the semicircle, which is  $\frac{1}{2} (0.7854 \times 10^2) = 39.27 \text{ sq.ft.}$ , making the total sectional area of the airway 89.27 sq.ft. If the average velocity of the air current is 500 ft. per min., the quantity of air passing in the airway is  $500 \times 89.27 = 44,635 \text{ cu.ft. per min.}$

# Coal and Coke News

## PENNSYLVANIA

### Anthracite

**Milton**—Over \$700,000 must be paid to the county and school districts in the county in tax money by the coal corporations having holdings therein. This money was held up pending the appeals from the tax revision boards increase of assessment, the subsequent appeals, and finally the supreme court. It is being paid in instalments. First \$50,000 was paid, then \$20,000, then \$20,000 more, and so on. The school districts get most of the money while the county gets a small share.

**Freeland**—Claiming that the company failed to provide adequate safety appliances the Lehigh Valley Coal Co. has been made the defendant in a suit for \$5000 brought by Mrs. Catherine Ferry of this place, to recover for the loss by death of her son, Daniel, in the Drifton mines of the company.

**Wilkes-Barre**—An action in assumpsit was recently started by Edward Fleming of Plymouth against the Kingston Coal Co., in which he attempts to recover \$200 he claims for work done in the Gaylord mine of the company during February of 1892. He alleges to have blasted and loaded out about 200 tons of coal during the month before the "Gaylord disaster" occurred covering the place where the coal had been cut and loaded. He further alleges that in 1910 the coal prepared by him was recovered from the mine by the company and shipped to market; but that it has failed to pay him for the work he performed.

**Seranton**—One of the worst mine caves to occur in years took place recently in a territory that had been regarded as safe and free from underground workings. Every building in a considerable area on Jefferson and Adams avenues near Maple St. was badly damaged. One of the worst damaged buildings was that occupied by the 13th regiment armory where it was generally supposed that when the ground was acquired, the mineral rights went with it. There are now many fissures in the building about 3 in. in width while the entire structure was thrown out of plumb.

Production of anthracite during June fell below that of June, 1914, the majority of the collieries working only part time. Shipments of anthracite in June, 1914, amounted to 6,130,186 tons, but it is probable that for June, 1915, they will be about 400,000 tons less. The shortage for the first five months of 1915 was 536,401 tons, and it is thought that when the business for June is included, the deficit for the first half of 1915 will be nearly 1,000,000 tons less than the shipments over the same period of last year.

**Pittston**—A serious mine cave, west of the Taylor yards recently occurred which held up traffic for several hours and damaged a considerable portion of the double-track road bed of the Bloomsburg division of the Lackawanna R.R. This cave was discovered by yard men in time to send out warning. The cave occurred near the Old Forge and Taylor division line, and not far from the Forest Home cemetery.

The Pennsylvania Coal Co. recently posted notices informing the employees that thereafter no funds would be collected by the company for the relief fund which this firm has been carrying for many years. It is said that as soon as the surplus, which has been accumulated, is paid out to those members who have met with accidents in the mines, the fund will be abandoned. This move is probably the result of the passage of the compensation act by the recent legislature.

**Almedia**—Some of the coal dredges at work in the river at Almedia are being moved to Berwick where a bank of coal has been discovered in the river 3 ft. in thickness.

**Hazleton**—Kehoe & Co., mining contractor, who is in charge of the work of stripping a new operation for the Lehigh Valley Coal Co. at Scotch Valley, has been compelled to temporarily abandon the work. The 100 men employed by it went on a strike, alleging they had worked 9½ hr. a day and were only paid for a 9-hr. day.

D. J. Roderick, mine inspector in charge of the 11th anthracite district, who also acts as chairman of the examining board, has announced the result of the recent examination conducted by him for the position of foremen and assistant foremen. Fifty-one men participated in the examination and

37 passed. Of this number 11 qualified as foremen and 26 as assistant foremen.

**Mahanoy City**—Mine cave-ins at Yatesville recently so badly damaged the tracks of the Lehigh Valley R.R. that it was necessary to temporarily discontinue all railroad traffic and passengers were compelled to walk around the depressions to trains on the other side.

### Bituminous

**West Apollo**—Fire supposed to have been caused by friction from the pulleys of the shaft at the Hick Coal Co. tipple near West Apollo, Westmoreland County, totally destroyed that building recently. There were 14 men working on the night shift and these were rescued with difficulty on account of the dense smoke. The fan house took fire and was consumed before the men emerged from the workings.

**Connellsville**—The Connellsville coke trade is increasing in volume. The production of the furnace ovens has risen to about 224,000 tons weekly, while the merchant production is 130,000 tons. The merchant operators are thus running at about 58 per cent. capacity while the furnace ovens are working at 74 per cent. Practically all of the independent coke operators in the Connellsville region have posted notices that the wage rate would be advanced to equal that of the H. C. Frick Coke Co. This rate is the highest ever paid, while there is a noticeable shortage of labor. Four hundred ovens have been ordered fired by the Frick company, while merchant ovens are being steadily added to the active list.

**Evans Station**—Between 25 and 30 coal miners went on strike recently at the plant of the Evans Coal & Coke Co. when their demand for a wage increase was refused. There was no trouble, however, and an amicable settlement was expected.

**East Millsboro**—One man was killed, four others were overcome by gas, and 42 had narrow escapes as the result of an explosion of gas in the Husted-Seaman mine on July 1. The one man killed, John Ward, was a pipe fitter, who was crushed under debris and suffocated by the after damp. The superintendent, fireboss, machine boss, and road boss were overcome by gas in an attempt to reach Ward. This mine employs about 150 men of whom 43 were in the pit when the explosion occurred. The fans were not injured by the force of the explosion and were immediately started operating at their full capacity. The cause of the explosion is not definitely known, but it is believed that a pocket of gas was ignited. No serious damage was done to the mine which will shortly be in operation again.

## WEST VIRGINIA

**Charleston**—The deficit in the workmen's compensation fund now amounts to about \$770,000. Operators have been paying the rate of \$1 per \$100 of pay roll. It is believed that for a time assessments against the operators must be placed at \$2 for every \$100 of payroll. This of course will be only temporary and would be graduated according to the amount of money which would have to be paid out by the commissioner. This rate is agreeable to most of the operators in the state, but those in districts where the death rate has been low object to such an assessment.

West Virginia has been redistricted for the inspection of mines, providing 15 districts instead of 12. This has been done in compliance with the new mining law passed by the last regular session of the Legislature. Three additional inspectors have been appointed.

**Bluefield**—The volume of coal shipments is still increasing, and from present indications it would appear that July will be another record month. It is said that never has the export trade been so great as now, recently Norfolk advanced to second place among the shipping ports of the country, it being said that this was largely due to the foreign coal shipments. Coal operators report that a new record will be established this month, probably the greatest in the history of the coal field.

**Grafton**—The Maryland Coal Co. is now operating its mines at Wendel full time and is hiring men to meet the demand for greatly increased business. The company is now loading from 90 to 100 cars of coal per day.



## TENNESSEE

**Knoxville**—Southern Appalachian coal operators at a recent meeting here discussed exportation facilities, the preparations made for shipments via Charleston, S. C., etc. It was reported at the meeting that a South American country had sent an agent to the United States some time ago to buy 1,000,000 tons of coal but that he was unable to get it. Restricted traffic facilities, it is stated, shut the Appalachian operators out of this business.

## KENTUCKY

**Barbourville**—Ground has already been broken for the Cumberland & Manchester R.R., the 24-mile line to be extended from Barbourville to Manchester, Clay County. The new line, when completed, will open up one of the most extensive, undeveloped coal and timber fields in the South.

## OHIO

**Columbus**—A campaign is planned to educate Ohioans to "use Ohio coal." The first step will be scientific analyses to show that Ohio coal is superior to competing fuels from other states and will produce more heat units in proportion to the cost per ton. This activity in behalf of Ohio coal is the result of the shutting down of the mines of the Sunday Creek Coal Co., the largest operator in the Hocking district. Officers of this company are practically suspending operations in Ohio and will go to West Virginia, where they have valuable coal properties. They give as their reason that Ohio coal-carrying roads are discriminating in favor of West Virginia coal, and that it is practically impossible to compete, at a profit, with the West Virginia product.

A reorganization of the Ohio Mining Department, a part of the work of the Ohio Industrial Commission has been effected. On July 1, J. W. Davies, chief deputy mine inspector retired because of lack of appropriation to pay his salary. Mr. Davies was chief mine inspector under the Harmon administration and was succeeded by J. M. Roan with the title of chief mine inspector and safety superintendent. Mr. Roan has 12 deputies, who are used as field men.

**Bethesda**—The Badger Mining Co. has begun work at the mine north of the town. It will confine its work for the present to the Parsons tract recently purchased.

## INDIANA

**Bicknell**—Robinson Bros., of Linton, who are sinking a shaft opening for a coal mine near Edwardsport, have reached the river vein. Later they will work a deep vein north of this mine.

## OREGON

**Toledo**—The newly discovered coal mine here is operating daily with an output of 10 tons. This will be continued the balance of this year, and improvements put in for the next season's run to increase the output.

## FOREIGN NEWS

**Hillcrest, Alta.**—The Hillcrest Collieries, Ltd., has been idle since the 15th of June, on account of British miners refusing to work until Germans and Austrians had been discharged. A conference just held between the operators and miners brought out that the company would permit the British and foes of that nation to work alternate weeks, if they would accept.

**Juneau, Alaska**—The local land office has received a decision of the commissioner of the general land office in the case of the Alaska Smokeless Coal Co.'s application for a group of claims in the Behring River district comprising some 1000 acres and known as the Feed group. The locators were natives of Norway and Sweden. Applications were rejected because the locators had not done the required development work. It is the hope of this office that all pending claims will be cleared up before the end of the year.

## PERSONALS

Maury Robinson, the new manager of the Western sales office of the Davis Colliery Co., has taken up his duties succeeding J. W. Hood.

Morton McTurk, superintendent of the Hazle Mountain Coal Co.'s operations of the Black Ridge, has been promoted to the general managership of the McTurk Coal Co., of Girardville, Penn.

N. T. Roberts, Western sales agent of Williams & Peters, has been appointed a city grade-crossing commissioner of Buffalo, N. Y. The position is an important one and the commission has done much service, with much more to be done.

D. A. Thomas, the Welsh coal mine owner, who will represent the British Government in this country and Canada for the purchase of munitions of war, arrived in New York on the "St. Louis" on Monday, July 5. Mr. Thomas states he is here purely on Government business and will pay no attention to the coal industry.

C. L. Couch has been elected president of the F. P. Weaver Coal Co. of Buffalo and C. W. Moss, vice-president, secretary and treasurer. They are practically the sole owners of the stock, having bought the interest of President F. P. Weaver on his retiring some years ago, because of poor health. He died three months ago.

Frank S. White, president of Alabama Convict Improvement Association, has called a meeting of the state executive committee and county committees for July 13, the date of assembling of the legislature, for the purpose of working destruction to the convict lease system in Alabama, and having the convicts transferred from the coal mines to the highways.

George E. Silvester of Rockwood, Tenn., has been elected president of the Mine Inspectors' Institute of the United States of America. The other officers are as follows: Vice-presidents, Thomas Graham, L. D. Devore, Rees H. Beddow; secretary, J. W. Paul; assistant secretary, R. S. Wheatley; treasurer, R. T. Rhys, and editor-in-chief J. T. Beard.

## OBITUARY

George W. Hines, a well-known coal miner and secretary of Local Union No. 786, United Mine Workers of America, died in Wheeling, W. Va., recently, following an illness of several weeks. Mr. Hines was 40 years of age and always took an active part in the affairs of the miners. He is survived by his widow and three children.

H. Sparks Bute, aged 70 years, dropped dead of heart failure in the office of Attorney J. M. Core, while attending a meeting of the Board of Directors of the Fink Creek Coal Co. of West Virginia. C. L. V. Bute and J. P. Bute of Uniontown, Penn., brothers of Mr. Bute, were present at the meeting. Mr. Bute was a bachelor and resided with his brother C. L. V. Bute.

John Zelenka, 35 years of age, Secretary of the Pittsburgh Vein Operators' Association of Ohio, with headquarters in Wheeling, died at his home in Brookside, Ohio, July 3, of diphtheria. His youngest daughter died the preceding day of scarlet fever. Interment was made at Linwood Cemetery. Mr. Zelenka entered the mines of Ohio at the age of 8 years, remaining there until the age of 24, when he was made president of District 5 of Ohio.

## PUBLICATIONS RECEIVED

"Report of the Mine Rescue Station Commission of Illinois for 1915." Cloth bound volume of 41 pp., 6x9 in., illustrated.

Department of the Interior, U. S. Geological Survey. "Potash Salts, 1914," by W. P. Phalen. Thirty-two pages, 6x9 in.; illustrated.

Department of the Interior, U. S. Geological Survey. "The Production of Fuller's Earth in 1914," by Jefferson Middleton. Six pages, 6x9 in.; unillustrated.

Washington Geological Survey, Bulletin No. 10. "The Coal-fields of Pierce County," by Joseph Daniels. Cloth bound volume of 149 pp., 6x9 in., illustrated.

U. S. Department of Agriculture, Bureau of Soils. "Soil Survey of Logan & Mingo Counties, W. Va.," by W. J. Latimer. Thirty pages, 6x9 in., with large map.

University of Illinois, Engineering Experiment Station, Bulletin No. 78. "A Study of Boiler Losses," by A. P. Kratz. Seventy-two pages, 6x9 in.; illustrated.

Department of the Interior, U. S. Geological Survey. "The Production of Lead in the United States in 1914," by C. E. Siebenthal. Leaflet of 8 pp., 7½x10½ in., unillustrated.

The Industrial Commission of Ohio. Department of Investigation and Statistics, Report No. 3. "Statistics of Mines and Quarries in Ohio, 1913." Ninety-five pp., 6x9 in., illustrated.

**Department of the Interior, U. S. Geological Survey.** "Advance Statement of the Production of Copper in the United States in 1914," by P. S. Butler. Four pp., 6x9 in., unillustrated.

**State of Washington.** "Report of the State Inspector of Coal Mines, Biennial Period Ending Dec. 31, 1914," by James Bagley, inspector, Seattle. One hundred and seventeen pp., 6x9 in., illustrated.

**Illinois Coal Mining Investigations** Cooperative agreement. Bulletin 11. "Coal Resources of district No. 7. Coal No. 6, West of Duquoin Anticline," by Fred H. Kay. Two hundred and thirty-three pp., 6x9 in., illustrated.

**University of Illinois.** Bulletin No. 77 of the Engineering Experiment Station. "The Effect of Boron Upon the Magnetic and Other Properties of Electrolytic Iron Melted in Vacuo," by Trygve D. Yensen. Nineteen pp., 6x9 in., illustrated.

## TRADE CATALOGS

**The Spray Mfg. Co.,** Boston, Mass. "Cooling Water." Seven pages, 6x9 in., illustrated.

**The Young Men's Christian Association.** "Among the Coal Miners." Eighteen pages, 6x9 in., illustrated.

**Beaudry & Co.,** 141 Milk St., Boston, Mass. "Beaudry Hammers, Motor Driven." Seven pages, 3½x6 in., illustrated.

**The Morrow Manufacturing Co.,** Wellston, Ohio. "Rescreened Chunks." Thirty-two pages, 5½x8 in., illustrated.

**Sullivan Machinery Co.,** Chicago, Ill., Bulletin No. 71-A. "Air Lift Pumping." Thirty-two pages, 6x9 in., illustrated.

**Cresson-Morris Co.,** Philadelphia, Penn. Form No. 1001. "Barometric Condensers." Twenty-eight pages, 9x12 in., illustrated.

**The Marion Steam Shovel Co.,** Marion, Ohio. Catalog No. 93. "Marion Reliability and Your Profits." Illustrated, 48 pp., 5½x8 in.

**The Scranton Pump Co.,** Scranton, Penn., Bulletin 102. "Scranton Duplex Plunger Pumps." Twelve pages, 6x9 in., illustrated.

**Bohannon-Dugger Easer Joint Co., Inc.,** Ensley, Ala. "The Engineer's Version of Easer Joints." Sixteen pages, 4x9 in., illustrated.

**The Stromberg-Carlson Telephone Mfg. Co.,** Rochester, N. Y. "Central Energy Telephone." Thirty pages, 8x10 in., illustrated.

**The Link Belt Co.,** Philadelphia, Chicago, Indianapolis. "The Circular Storage System." Leaflet of four pages, 6x9 in., illustrated.

**R. D. Nuttall Co.,** Pittsburgh, Penn. Catalog No. 12. "Mine and Industrial Gears, Pinions, Trolleys." Sixty-two pages, 7x9 in., illustrated.

**The Atlas Car & Mfg. Co.,** Cleveland, Ohio. Bulletin No. 1175. "Storage Battery Locomotives, Cranes and Cars." Illustrated, 32 pp., 6x9 inches.

**Gifford-Wood Co.,** Hudson, N. Y. Bulletin No. 17. "Pivoted Bucket Carrier for Elevating and Conveying Coal, Coke, etc. Sixteen pages, 6x9 in., illustrated.

**The General Electric Co.,** Schenectady, N. Y. Bulletin 14-013. "Direct Current Commutating Pole Motors, Type R C." Fifteen pages, 8x10 in., illustrated.

**The Sullivan Machinery Co.,** Chicago, Ill., Bulletin No. 65-C. "Sullivan Diamond Core Drill, prices, estimates, equipment." Thirty-six pages, 6x9 in., illustrated.

**The Weston Electrical Instrument Co.,** Newark, N. J. "Lectures on Electrical Apparatus and Experiments." One hundred and three pages, 6x9 in., illustrated.

**Cement-Gun Co., Inc.,** 30 Church St., New York. Bulletin No. 101. "Cement-Gun Process of Permanently Repairing Coke Ovens, Etc." Four pages, 6x9 in., illustrated.

**The General Electric Co.,** Schenectady, N. Y. Bulletin 48-303. "Hand-Operated Starting Rheostats and Panels for Direct-Current Motors." Fourteen pages, 8x10½ in., illustrated.

**The American Mine Door Co.,** Canton, Ohio, "Mine Ventilation with Canton Automatic Trap Doors and Signals." Fifty-six pages, 6x9 in., illustrating and describing the Canton automatic mine door and its application.

**National Tube Co.,** Frick Building, Pittsburgh, Penn. Catalog J. "National Pipe for Steam, Gas, Water, Air, Kewanee Unions and Specialties, Iron and Brass Fittings, Valves, Etc." Three hundred and ninety-four pages, 5x7½ in., illustrated.

## INDUSTRIAL NEWS

**Moundsville, W. Va.**—The headquarters of the Mound City Coal Co. have been removed from Pittsburgh to Moundsville.

**New York, N. Y.**—The Waterbury Co., manufacturers of manila, sisal and wire rope, has removed its general offices from 80 South St., New York City, to 63 Park Row.

**Waukegan, Ill.**—Extensive repairs and improvements are now being made at the Reiss coal docks which when completed will probably make this plant one of the largest on Lake Michigan.

**Philadelphia, Penn.**—The U. S. District Court in an opinion handed down July 3, denied the application of the Government to dissolve the alleged anthracite coal trust and decided the case in favor of the defendants.

**Harrisburg, Penn.**—According to figures issued by the Bureau of Mines the counties of Carbon, Lackawanna, Luzerne, Northumberland and Schuylkill in Pennsylvania mine the bulk of the world's anthracite—96 per cent.

**Chicago, Ill.**—Proposed increases in rates on coal over roads operating from the Illinois mines to Chicago and points in Wisconsin and North Dakota, were recently suspended by the Interstate Commerce Commission until Dec. 29 next.

**Philadelphia, Penn.**—During the past month the collieries of the Lehigh Valley Coal Co. were in operation 18 days, which is seven days less than the same period of 1914. The collieries will also be closed down during the first week of July.

**Bellaire, Ohio.**—Announcement was recently made that the officers of the Pittsburgh-Belmont Coal Co., which has been located in Columbus, have been removed to the Dickens Bldg., in Bellaire. The company owns two mines at Neff, and one at Lafferty.

**Johnstown, Penn.**—The Greenwich Coal & Coke Co. has transferred 161 acres of coal in Greene Township, Indiana County, to the Manor Real Estate & Trust Co., the land holding concern of the Pennsylvania R.R. The consideration is placed at \$12,575.73.

**Ethel, W. Va.**—The George's Creek Coal Co. has given the Roberts & Schaefer Co. of Chicago an order for the mechanical equipment for a 4-track, frame-constructed, "Marcus" patent coal tippie, using "Rands" shaker loading boom, for installation at Ethel, W. Va.

**Charleston, W. Va.**—The Campbell's Creek R.R. Co. has filed a petition with the Public Service Commission asking for permission to file a tariff on coal shipments from Perryville and Putney to Dana for shipment by river, the tariff to show an increase of 2½c. per ton.

**Washington, D. C.**—Schedules of the Union Pacific R.R., proposing increased rates on coal in car loads from certain mines in Wyoming and Colorado to interstate points on the Union Pacific, were recently suspended by the Interstate Commerce Commission until Oct. 28 next.

**St. Clairsville, Ohio.**—Oliver Monace and others have organized a coal company and are opening a mine on the Wheeling & Lake Erie R.R. Work on the tippie will be started shortly, while coal will be loaded from a temporary dump in a few days. The side track to the mine has already been laid.

**Mauch Chunk, Penn.**—As an indication of improved business conditions in the mining region it is interesting to note that a Mauch Chunk foundry and machine company has declined a \$3,000,000 order for war munitions, stating that its plant is busily engaged in the manufacture of colliery machinery.

**Harlan, Ky.**—Several thousand acres of the best coal land in Harlan County will be opened for immediate development when work of grading the new railroad extension from the terminal of the Waisoto & Black Mountain R.R., at Ages, to the mouth of Yocum's Creek is completed. Contractors have started the work.

**St. Benedict, Penn.**—The Roberts & Schaefer Co., Chicago, has been awarded a contract by the Cherry Tree Coal Co., which is owned by Peale, Peacock & Kerr, for the building of a new "Marcus" patent coal tippie, complete with screening and picking facilities, for installation at Mine No. 15, St. Benedict, Penn.

**Mullins, W. Va.**—I. W. Clark, a contractor of Graham, W. Va., was recently awarded a contract for the erection of a considerable number of miner's dwellings, at the operation of the Devils Fork Coal Co. This firm is opening up its operation, and the new houses must be completed at an early date. The work is to start at once.



**Harrisburg, Penn.**—Complaint was recently filed with the Public Service Commission by W. P. Boland, of Scranton, against the rates of the Delaware, Lackawanna & Western R.R. Co., charging discrimination. It is alleged that the railroad has interfered with the successful operation of a plant in which the complainant is interested.

**Washington, D. C.**—The output of bituminous coal in the United States for the first six months of 1915 is estimated by the U. S. Geological Survey to be between 180,000,000 and 190,000,000 tons, the rate of production having been from 85 to 90 per cent. of that averaged during the previous year. Production is now, however, on the increase, having reached its low ebb in March.

**Wheeling, W. Va.**—The Edgewood Coal Co. recently sold a block of about 800 acres situated three miles east of Wheeling to Pennsylvania and Ohio people. The price is reported to have been in the neighborhood of \$75,000. There is a mine in operation on this tract, and it is said that the new owners will operate it on a much larger scale than it has been worked heretofore.

**Huntington, W. Va.**—Unofficial figures for June show the largest coal tonnage over the Grand Central division of the Chesapeake & Ohio R.R. during a single month in the road's entire history. Approximately 2,100,000 tons of coal were loaded during June, which exceeds the June figures of last year by 60,090 tons. The present coal traffic of the railroad is approximately 80,000 tons per day.

**Birmingham, Ala.**—It is probable that one of the Sloss-Sheffield Steel & Iron Co.'s furnaces at North Birmingham will go into blast within the next week or 10 days. This will make four furnaces going into blast in the Birmingham district in the near future. Considerable improvement in business conditions in the immediate territory composing the Birmingham district is evidenced by these signs of returning industrial activity.

**Tuscaloosa, Ala.**—The Pratt Consolidated Coal Co.'s steamer "N. Carney," with two barges of coal in tow, the first to come from above Lock 17, on the Warrior River, recently passed Tuscaloosa, bound for Mobile. The barges were built at the Pratt company ship yards at Holt, and were loaded with 1000 tons of coal each. The company will make a careful estimate of the cost of handling coal by barge which will largely govern its plans for future shipments.

**Lexington, Ky.**—H. L. Burch, manager of the traffic department of the Lexington Board of Commerce, recently went to Louisville to confer with D. M. Goodwyn, general freight agent of the Louisville & Nashville R.R., over the matter of freight rates. On account of their advantage as river points both Louisville and Cincinnati have better freight rates on coal than Lexington, though in many cases the coal is actually hauled through Lexington to those places.

**Covington, Ky.**—Holders of mortgage notes of the Phoenix Jellico Coal Co., of Laurel County, Ky., have brought suit in the United States district court at Covington, Ky., for the appointment of a receiver for the company. A total indebtedness on the notes amounting to \$46,000 is alleged and it is also asserted, as a ground for the receivership, that the company is insolvent, and that its business has been neglected, rendering the security of the noteholders inadequate.

**Whitesburg, Ky.**—The Baltimore & Ohio R.R. is entering the eastern Kentucky coal field for its supply of coal as orders aggregating 150,000 tons have been placed with Harlan County operators. It is expected that the Elkhorn Coal Co. at Kona, Ky., in the Boone's Fork field will also close contracts with the B. & O. shortly for a 25,000 ton order for the next few months. In the past the B. & O. has been getting a large part of its supply from the West Virginia field.

**Birmingham, Ala.**—Since the opening of Lock 17 on the Warrior River, and the inauguration of barge traffic in coal from this district to the Gulf, there has arisen a complaint that an overcharge of pilotage has been made. An investigation was made and an agreement has been effected whereby the Pilots Association has reduced the pilotage on coal one half. Senator H. T. Hartwell of the Finance and Taxation Committee of the legislature, says the legislature will pass a bill removing all reasonable objection to the present system of pilotage at Mobile.

**Philadelphia, Penn.**—During May of the present year the Philadelphia & Reading Ry. carried 1,349,796 tons of bituminous coal as compared with 1,101,288 tons in May, 1914. The Reading, without a bituminous mine on its entire system, carries a greater tonnage of this coal than it does of anthracite, in which latter kind of fuel it is the leader. Of course the carriage of bituminous is not nearly so profitable because of the fact that the railway company must share the freight with

the originating lines and thus anthracite continues to furnish the chief source of traffic revenue.

**Lewis, Wash.**—The Davis anthracite coal mines case, which has been pending 18 years, has just been settled in favor of two nephews, H. K. Davis of Lewis and S. A. Davis of Chehalis, Wash. Patents will soon be issued for them. The claims were taken up some 20 years ago, but rangers at that time reported them more valuable for timber than for coal. Meanwhile, it is said, New Yorkers jumped the claims. Since that time, they have been tied up in litigation. The coal tests 86 per cent. carbon and on the claims there are said to be seven veins making a total of 52 ft. of solid coal.

**South Bethlehem, Penn.**—The Lehigh Coke Co. has awarded a contract for the erection of a \$300,000 benzol plant to the Carl Still Co., a German concern. The byproducts which are used extensively in the manufacture of high explosives, reliable sources state will be stored for the present. The Lehigh Coke plant is producing 2000 to 2500 tons of coke per day, 212 ovens being in operation. The output will be increased about 50 per cent., as the 150 additional ovens will be placed in operation shortly. H. Koppers & Co., Chicago, have begun work on erection of 212 new ovens, to be completed by April, 1916.

**Bellaire, Ohio**—The Sunday Creek Coal Co., the largest operator in the Hocking valley, is closing its mines and stores in the Hocking valley, since it is impossible to mine coal in Ohio and to sell the coal at a profit warranting operation. The company will continue operations in its West Virginia properties and await improvement of fundamental conditions in Ohio. Factors against successful working in Ohio are asserted to be the Green coal screen law; preferential rates accruing advantage to West Virginia as against Ohio producers; and the cost of mining, which in West Virginia is far below the cost in Ohio.

**Pittsburgh, Penn.**—The Standard Underground Cable Co. has been awarded a gold medal, or highest award in its class, by the International Jury of Award, Panama-Pacific International Exposition for its exhibit of a complete line of electric wires, cables and cable accessories. This is the seventh award of this degree which has been received by this company in as many different expositions, and as its products have never been in similar competition oftener, this constitutes a perfect score. The exhibit consisted of samples of bars and insulated wire and cables of different kinds. Cable terminals, junction boxes and other cable accessories are also shown in considerable variety adapted to various classes of service.

**Philadelphia, Penn.**—Mayor Blankenburg has made the statement that his administration has saved the city during the past year \$5,000,000, due to the business-like methods instituted in every department. He particularly cites a saving of over \$100,000 in the amount of coal used by the various bureaus during the past year, stating that the tonnage has been continuously decreasing since the beginning of his administration, despite the fact that the city has grown and the population increased. As proof of his assertion tonnage figures for the past three years are given as follows: 1912, 270,339; 1913, 256,089; 1914, 223,316 tons. Estimating the consumption for 1915 to be the same as 1914 there has been a reduction in the purchases since 1911 of 144,648 tons.

**Philadelphia, Penn.**—The Supreme Court on July 2 heard the argument in the suit brought by the St. Clair Coal Co. and the Alden Coal Co. to test the validity of the 1913 coal-tax act. The case had reached the court on an appeal from the decision of the Dauphin County Court declaring the act valid. The argument offered was practically similar to that before the lower court in that the act was special and local legislation and also in violation of the constitution because it bore on more than one subject—the levying of a tax and then the distribution to the various municipalities and townships in the producing counties. Following the usual custom of the Supreme Court the case has been held under advisement and it is not likely that it will render an opinion for some little time.

**New York, N. Y.**—The Delaware, Lackawanna & Western Coal Co. is taking steps to comply with a recent ruling of the U. S. Supreme Court requiring that the business of the coal company and of the Lackawanna R.R. be entirely disassociated. E. E. Loomis has resigned the presidency of the coal company, while W. H. Truesdale, vice-president, and Geo. E. Baker, Jr., director, have also resigned their positions. The fact that these officers and directors of the coal company were officers and directors of the railroad were commented upon in the court ruling as an indication of the connections between the companies. The board has authorized the officers of the company to execute a new contract, which shall conform to all matters questioned by the Supreme Court as either illegal or objectionable.

## Coal Trade Reviews

### General Review

**Retailers have full stocks of anthracite and the dullest period of the year is now at hand. Bituminous exports again break all previous records, but domestic market continues under heavy pressure. Middle Western circulars advanced.**

The dullest month of the year in anthracite is now at hand. Some operators report the situation as no slower than usual but retailers have apparently accumulated as much coal as they propose to. Prices continue at a low level and some of the individuals are finding the going hard because of their lack of storage facilities. Mine operations continue heavily restricted, and the production for last month showed a decline of more than 800,000 as compared with the same period of last year.

Bituminous is quieter if anything, although there is still a general note of optimism throughout the trade, and the agencies are confident that the next price revision will be upward. Curtailed industrial operations over the holidays tended to reduce the surpluses, and this has been further accentuated by the general tendency among consumers to draw on their reserve supplies. This, together with another uniform smashing of previous export records, are the chief factors of a constructive nature in the market. The June movement over the Hampton Roads piers exceeded the previous high mark by more than 100,000 tons and the gross foreign movement from Atlantic coast ports for the month will be approximately a quarter of a million tons more than any previous record. Otherwise the situation is discouraging; stocks are large so that delays in transportation occasion no anxiety, and the trade is thoroughly in the grip of the customary midsummer dullness.

In spite of the stir in coke and steel circles, agencies in the Pittsburgh district are competing keenly for any business that appears, and even more attractive quotations are being developed on contracts to Apr. 1; competition has been especially severe for a large railroad contract now being negotiated. Some demurrage coal is noted, and there will very probably be more. Export business is helping the situation very slightly, but it cannot attain sufficient proportions to affect the general situation in the Pittsburgh district.

The drastic action of the Sunday Creek Co. in abruptly ordering a complete cessation of operations at all its Hocking Valley mines, has had a bad sentimental effect on the Ohio trade. There is some stocking, but dealers appear confident of being able to get shipments as required and competition is very strong for what business develops. Some distress coal has recently been forced on the market at ruinous prices which has made the consumers even more confident that they will be able to continue buying at low prices indefinitely.

The July 1 advance in the Middle Western circular occasioned a slight month-end spurt and created a better feeling in the trade. There has been a general advance all along the line and shippers are showing a disposition to hold the circular as the minimum, which is in welcome contrast to the demoralized conditions that have prevailed for the past several weeks. Outlying districts appear to be taking very little coal, and a heavy buying movement is anticipated in this direction later. The continued encroachment of the Eastern coals into the Middle Western district is causing much concern.

**A Year Ago**—Curtailed mining in the anthracite regions and the market continues under heavy pressure. Eastern bituminous situation dull but gradually improving toward the West. Lake movement unsatisfactory. Agreement reached in the Ohio wage scale.

### BUSINESS OPINIONS

**Iron Age**—Developments of the week show a further improvement in steel trade conditions and prospects. Increasing production, accompanied by increasing demand, indicates that the summer months will show no letdown. They may even be marked by activity on a larger scale. The June contract period ended with a very considerable volume of business taken at prices from \$1 to \$3 below those now asked,

and specifications came in freely at the last. Pittsburgh reports that June business in many cases exceeded that of any month in a year, while in the Chicago district, where the improvement in the spring months by no means kept pace with that at Pittsburgh, June bookings were nearly double those of May.

**Boston News Bureau**—It is difficult to imagine a more favorable position for the long pull than the fact that we are selling products abroad at our own prices and buying foreign holdings of American securities at our own prices. We hold the upper hand coming and going. We are also steadily increasing our gold supply either in the actual metal or gold contracts. As trade follows the flag, so confidence follows gold. At the moment, Great Britain is liquidating American securities of the best character in order to subscribe to the new British war loans. Sterling exchange shows the effects of this selling, although some of the strength may be attributed to the negotiations to place a British loan in New York of \$100,000,000 or more.

**Dun**—Prospects at the opening of the second half of the year afford a striking contrast to those of six months ago. Then, new problems were presented that made the outlook extremely uncertain, whereas business has since become more fully adjusted to the unusual conditions created by the war, and the future is now viewed with equanimity rather than concern. The record of the first half of 1915 is largely one of difficulties encountered and obstacles surmounted, and the fundamental soundness of the economic structure is demonstrated by the steady recuperation from effects of the previous strain.

**Marshall Field & Co.**—Current wholesale shipments of dry goods have been heavier than during the corresponding week a year ago, and collections are good. A larger number of buyers were in the market than for the same period last year.

**Bradstreet's**—Further improvement, notwithstanding vagaries of the weather and slow movements at some points, is the outstanding feature of this week's reports. Where the weather has been favorable, seasonable goods have moved from the counters of retail dealers in larger volume, and though clearance sales have been a stimulus to this line, faith in the future is marked. Crops, collectively considered, are promising, some of them more so than ever before. War orders are of enormous proportions; brass mills in New England, sold far ahead, are intensely active.

### ATLANTIC SEABOARD

#### BOSTON

**Concessions still offered f.o.b. and delivered prices low. Georges Creek again in short supply coastwise. Market for Pennsylvania grades continues to improve slightly. Anthracite shippers fairly well supplied with orders.**

**Bituminous**—The Pocahontas and New River situation shows no change from a week ago. Some of the factors still have coal they are pressed to sell and that accounts for the unevenness in prices. Other shippers have a sufficient amount of business in hand, both coastwise and off-shore, and they talk of better conditions in a month or so. No buying, however, has developed of any consequence. Stocks are large and even contract demand has sagged off. A week ago there was only one coal boat discharging at the largest railroad terminal here. Prices for delivery inland remain at the low level established by "market cargoes" earlier although the concerns who have re-handling facilities of their own are now making the prices. The demand here is unlikely to improve before September at the earliest.

Cargoes are being despatched in record time at all the Hampton Roads piers and there is certainly no shortage of coal. The movement coastwise has been retarded by weather but such is the state of trade that a week's delay would be hardly noticeable. The only possible chance of upset is a strike next spring.

Georges Creek is again in short supply at Philadelphia and at New York. A fortnight's notice is required in some cases and tonnage at Baltimore is loading rather slowly. It is



likely that Georges Creek transportation for New England will soon be loading again at Hampton Roads in order to keep contractors supplied.

The better grades from Pennsylvania continue to show slight improvement. One of the disadvantages faced by new coals in this territory is that the operators are required to give extended options pending trial of the coal. It is the sign of the times just now that several of these options are being withdrawn. Certain of the Cambrias and Somersets that are available for export are participating in a fair share of the off-shore business—more than was expected.

Current quotations on bituminous at wholesale are about as follows:

|                     | Clearfields | Cambrias<br>Somersets | Georges<br>Creek | Pocahontas<br>New River |
|---------------------|-------------|-----------------------|------------------|-------------------------|
| Mines*.....         | \$0.85@1.40 | \$1.20@1.60           | \$1.67@1.77      |                         |
| Philadelphia*.....  | 2.10@2.65   | 2.45@2.85             | 2.92@3.02        |                         |
| New York*.....      | 2.40@2.95   | 2.75@3.15             | 3.22@3.32        |                         |
| Baltimore*.....     |             |                       | 2.85@2.95        |                         |
| Hampton Roads*..... |             |                       |                  | \$2.65@2.80             |
| Boston†.....        |             |                       |                  | 3.60@3.78               |
| Providence†.....    |             |                       |                  | 3.50@3.73               |

\* F.o.b. † On cars.

**Water Freights** remain as last quoted. There is no particular demand for tonnage and on the other hand there is no great amount of it seeking charters.

**Anthracite**—While there is no activity in domestic sizes, there is a fair amount of buying, and the shipping companies are not filling orders very promptly. Retail prices were advanced in Boston 25c. on all sizes, effective July 1. The new schedule is:

|             |        |               |        |
|-------------|--------|---------------|--------|
| Broken..... | \$6.75 | Pea.....      | \$5.75 |
| Egg.....    | 7.50   | Shamokin..... | 7.75   |
| Stove.....  | 7.50   | Franklin..... | 8.75   |
| Nut.....    | 7.75   |               |        |

#### NEW YORK

**Practically no spot orders for bituminous coal. Pennsylvania operators report better business. Anthracite a trifle stronger. Operations still curtailed.**

**Bituminous**—The scarcity of spot orders continues in the soft-coal trade. Contract coals appear moving as well, if not better, than for some weeks. As anticipated the reports for June show that the export business exceeded all expectations with a still better outlook for this month.

The holiday affected shipments noticeably this week and most of the mines were idle nearly the full week; this had a tendency to strengthen the market in regard to supply, but not in prices. Demand from New England is gaining strength. Pennsylvania operators report increased orders for the better grades. Manufacturers are drawing on their reserve supplies and the work of replenishing these must soon begin.

Operators are now feeling the effects of the labor shortage. Many Italians and other foreigners have left the mining regions for their native lands while others are seeking employment in regions where work is steadier.

Some shippers report practically no spot business and none in prospect until fall. Inquiries for export coals continue to be received. Unofficial reports indicate that the exports from the Atlantic seaports for June were 256,695 tons more than those of May.

Current quotations are on the following basis:

|                             | South<br>Amboy | Port<br>Reading | St. George  | Mine<br>Price |
|-----------------------------|----------------|-----------------|-------------|---------------|
| Georges Creek Big Vein..... | \$3.30@3.40    | \$3.30@3.40     | \$3.30@3.40 | \$1.75@1.85   |
| Georges Creek Tyson.....    | 3.00@3.10      | 3.00@3.10       | 3.00@3.10   | 1.45@1.55     |
| Clearfield:                 |                |                 |             |               |
| Medium.....                 | 2.65@2.80      | 2.55@2.65       |             | 1.10@1.25     |
| Ordinary.....               | 2.55@2.60      | 2.55@2.60       |             | 1.00@1.10     |
| Broad Top Mountain.....     |                |                 |             | 1.10@1.45     |
| Cambria County:             |                |                 |             |               |
| South Forks.....            | 2.90@3.05      |                 |             | 1.35@1.50     |
| Nanty Glo.....              | 2.75@2.80      |                 |             | 1.20@1.25     |
| Barnesboro.....             | 2.65@2.70      |                 |             | 1.10@1.15     |
| Somerset County:            |                |                 |             |               |
| Quemahoning.....            |                | 2.70@2.85       | 2.70@2.85   | 1.20@1.30     |
| Medium.....                 | 2.65@2.70      | 2.60@2.65       | 2.60@2.65   | 1.10@1.15     |
| Latrobe.....                | 2.45@2.55      |                 |             | .90@1.00      |
| Greensburg.....             | 2.75@2.80      |                 |             | 1.10@1.15     |
| Westmoreland.....           | 2.95@3.20      |                 |             | 1.15@1.40     |
| West Virginia Fairmont ½    |                | 2.60@2.70       | 2.60@2.70   | .80@ .90      |
| Fairmont mine-run.....      |                | 2.50@2.60       | 2.50@2.60   | .70@ .80      |
| Steam.....                  |                | 2.45@2.50       | 2.45@2.50   | .90@ .95      |
| Western Maryland.....       |                | 2.35@2.40       | 2.35@2.40   | .80@ .85      |

**Anthracite**—While there has been no increased demand for anthracite there is not so much at the docks and the market is a little stronger. The lack of business and the holiday caused some of the companies to close down for a week, while most of the others suspended operations for three or four days. This had a beneficial effect on the situation.

Production for June is believed to have been at least 400,000 tons less than the same month last year when the shipments were 6,130,186 tons. It is believed that the total movement

for the first half of the current year will fall nearly a million tons short of that for the corresponding period of 1914.

Some wholesale dealers report a better call and are looking forward to an early fall business. The demand from the West has picked up some. Locally the situation is weak. Tidewater coal is moving slowly though the demand along the line is a trifle better.

Individual coals are the longest, with chestnut leading; some cargoes of this size are said to have been sold at about the April circular while stove and egg have been quoted at from 10 to 20c. off. The suspension of mining had a good effect on the steam-size situation. The supply on hand has been greatly reduced and the situation has eased up notably. There is a tendency toward better prices. Pea coal continues off with some of the cheaper grades quoted at very low prices.

Current quotations are as follows:

|                | Lower Ports |            | Upper Ports |            |
|----------------|-------------|------------|-------------|------------|
|                | Circular    | Individual | Circular    | Individual |
| Broken.....    | \$4.85      |            | \$4.90      |            |
| Egg.....       | 5.10        | \$4.80     | 5.15        | \$4.85     |
| Stove.....     | 5.10        | 4.80       | 5.15        | 4.85       |
| Chestnut.....  | 5.35        | 5.00       | 5.40        | 5.05       |
| Pea.....       | 3.35@3.50   | 2.70@2.95  | 3.40@3.55   | 2.75@3.00  |
| Buckwheat..... | 2.50@2.75   | 2.05@2.30  | 2.55@2.80   | 2.10@2.35  |
| Rice.....      | 2.00@2.25   | 1.70@1.85  | 2.05@2.30   | 1.75@1.90  |
| Barley.....    | 1.75@2.00   | 1.45@1.70  | 1.80@2.05   | 1.50@1.75  |

#### PHILADELPHIA

**Summer dullness pervades the anthracite market, with prices low. Individual operators troubled with car demurrage. Pea still low but with production fairly well taken care of. Bituminous very quiet, with good tide shipments to foreign ports.**

**Anthracite**—The market is now in the first of the two worst months of the year, but conditions are probably not as bad as expected. As a matter of fact some shippers say they are doing even better than last year, considered from the standpoint of tonnage. It is practically an idle season for the retail dealers, as they have taken into storage about as much coal as they intend to and this leaves them with plenty of time and opportunity to place their yards in condition for the expected good fall trade.

Prices still continue low, but there are those who profess to believe that the lowest point has been touched. If there is any particular size in demand it is stove; a large sale of a good quality of this size has been reported at the circular price. On the other hand quite a quantity of chestnut has been sold at from 20c. to 30c. off circular. Several dealers report that during the past week they have been offered all the domestic sizes at the April circular.

Pea coal, of course, continues to be offered at low figures, but no one seems to be actively pushing this size, and it is not likely that any lower prices will be made. If anything, pea has slightly stiffened owing to the large orders placed for delivery over the summer and the restricted working time at the collieries. The smaller sizes are not in active demand, although some of the companies are a little hard pressed to supply the special steam grades. Short working time has affected the production of sufficient broken coal to meet the demand on contract orders.

The dull market has made it expensive for the individual operators to keep their collieries working on short time, as some of them must do to fill contracts. Having no place to store the slower sizes, demurrage has mounted up. It is known that one firm was compelled to release an entire trainload of coal this week at April prices less the 2½% tax on this account.

Collections are still very slow.

The circular prices to which the 2½% state tax must be added, are as follows:

|               | City   | Tide   | City           | Tide   |
|---------------|--------|--------|----------------|--------|
| Broken.....   | \$3.20 | \$4.45 | Pea.....       | \$2.50 |
| Egg.....      | 3.45   | 4.70   | Buckwheat..... | 1.25   |
| Stove.....    | 3.70   | 4.70   | Rice.....      | .85    |
| Chestnut..... | 3.85   | 4.95   | Barley.....    | .50    |

**Bituminous**—If anything, the market is even a little more quiet. The closing down of the large cement plants in eastern Pennsylvania on account of the holidays has thrown quite a tonnage of slack on the market, which will cause some annoyance until it is moved. Prices are practically without change and considered to be about as low as they can possibly get, the feeling being that the only revision possible is upward. Tide shipments are holding up well, with fairly good inquiries from foreign sources.

The following prices are the general market on the various grades:

|                             |             |                              |             |
|-----------------------------|-------------|------------------------------|-------------|
| Georges Creek Big Vein..... | \$1.65@1.75 | Fairmont gas, mine-run..     | \$1.15@1.25 |
| South Fork Miller Vein..... | 1.50@1.60   | Fairmont gas, slack.....     | .65@ .75    |
| Clearfield (ordinary).....  | 1.00@1.20   | Fairmont lump, ordinary..... | .85@ .95    |
| Somerset (ordinary).....    | 1.00@1.15   | Fairmont mine-run.....       | .75@ .80    |
| West Va. Freeport.....      | .85@ .95    | Fairmont slack.....          | .45@ .55    |

Philadelphia ocean charters have been reported as follows:

| Vessel             | Nationality | To                 | Tons | Terms |
|--------------------|-------------|--------------------|------|-------|
| <b>Ardgarroch</b>  | British     | Marseilles         | 3100 |       |
| <b>Veneiro</b>     | Italian     | W. Coast Italy     | 3308 |       |
| Millie R. Bohannon |             | Wilmington, N. C.  |      | 1. 10 |
| Henry S. Little    |             | Summerside, P.E.I. |      | 2. 25 |
| Bayard Barnes      |             | Bahia              | 1400 | 7. 75 |
| <b>*Veneiro</b>    | Italy       | Savona             | 3308 |       |
| <b>*Oreland</b>    | British     | Rio Janeiro        | 2709 |       |
| Samuel W. Hathaway |             | Guaynilla          | 906  |       |
| *Egda              | Nor.        | Cuba               | 1610 |       |
| *Saint Andre       | French      | St. Nazaire        | 3681 |       |
| *Starfond          | Norwegian   | Havana             | 2256 |       |
| Geo. D. Edmonds    |             | Summerside, P.E.I. | 2256 |       |

Steamers are indicated by **bold face type**. \* Steamships.

#### HAMPTON ROADS

**Export and coastwise movement heavy. All previous records broken during month of June. Total movement 1,437,319 tons.**

Dumpings during the past week have been heavy. The largest amount of the exports has been taken by Italy. The largest single cargo of the week was loaded into the Panama collier "Achilles" which took 12,000 tons of cargo and 1200 tons of bunkers for Cristobal.

In addition to coal movement there has been one large cargo of coke loaded for Valparaiso. Nut and slack and high volatile coal has moved in small quantities to the New England ports but the heaviest cargoes have been either New River or Pocahontas run-of-mine. Export cargoes have practically all been New River or Pocahontas, very little high volatile coals being exported from Hampton Roads at any time.

The demand both for export and coastwise cargoes has been good and some large sales for prompt shipment are understood to have been made. Few of the shippers at this time have any large surplus of coal on the railroad yards and the accumulation at Tidewater appears to be decreasing considerably.

During the month of June the piers at Hampton Roads broke all previous records, the total movement for the three railroads being 1,437,319 tons. Previous to June the record was for 1,307,747 tons which was made during May. Of the total dumpings for June the Norfolk & Western Ry., at Lamberts Point, handled 853,845 tons, the Chesapeake & Ohio at Newport News 350,343 tons and the Virginia Ry. at Sewalls Point 233,131 tons.

**Railroad Tonnages**—Dumpings over the local piers for the past several weeks compare as follows:

| Railroad              | Week Ending |         |         |         |         |
|-----------------------|-------------|---------|---------|---------|---------|
|                       | June 5      | June 12 | June 19 | June 26 | July 3  |
| Norfolk & Western.... | 156,011     | 197,533 | 207,824 | 213,279 | 211,017 |
| Chesapeake & Ohio.... | 44,702      | 89,447  | 71,511  | 79,870  | 83,678  |
| Virginian.....        | 38,372      | 34,975  | 51,644  | 87,840  | 58,455  |
|                       | 239,085     | 321,955 | 330,979 | 380,989 | 291,828 |

The following vessels have cleared from Hampton Roads during the week of June 18 to 25:

| Norfolk                      |                  |      | Norfolk            |                   |       |
|------------------------------|------------------|------|--------------------|-------------------|-------|
| Vessel                       | Destination      | Tons | Vessel             | Destination       | Tons  |
| <b>Wascana</b> <sup>1</sup>  | Rio de Janeiro   | 7161 | <b>Achilles</b>    | Canal Zone        | 12000 |
| <b>Italia</b> <sup>2</sup>   | Torre Annunziata | 7000 | Blanch H. King     | Las Palmas        | 1547  |
| <b>Panama Trans-</b>         |                  |      | <b>Doonholm</b>    | Spezia            | 7026  |
| <b>port</b>                  | Valparaiso       | 4959 | <b>Alban</b>       | Para (Part Cargo) | 650   |
| <b>Ydun</b> <sup>3</sup>     | Georgetown,      |      |                    |                   |       |
|                              | Dem.             | 1700 | Newport News       |                   |       |
| <b>Chiswick</b> <sup>1</sup> | Barbadoes        | 3000 | <b>Palmanter</b>   | Buenos Aires      | 5100  |
| <b>Worrior</b>               | Buenos Aires     | 5205 | <b>Berwindvale</b> | Maddalena         | 7100  |
| <b>Clifton</b>               | Sierra Leone     | 5949 | <b>Tancred</b>     | St. Lucia         | 5500  |
| Edward B. Wins-              |                  |      | <b>Stormount</b>   | Havana            | 2800  |
| low                          | Rio de Janeiro   | 5011 | <b>Angelisea</b>   | Puerto Mutitar    | 6500  |
| <b>Rosalia L.</b>            | Genoa            | 9440 | <b>Woodleigh</b>   | Zarate            | 3200  |
| <b>Wegadesk</b>              | Canal Zone       | 6500 | <b>Antares</b>     | Port Au Spain     | 2800  |
| <b>Circe</b>                 | Gibraltar        | 3977 | <b>Sicania</b>     | Italy             | 4700  |
| <b>North Dakota</b>          | Naples           | 7100 |                    |                   |       |
| <b>Malang</b>                | Rotterdam        | 4884 |                    |                   |       |
| <b>Windsor</b>               | Palermo          | 7850 |                    |                   |       |
| <b>Blanca</b>                | Pernambuco       | 2299 |                    |                   |       |

**Prices fairly well maintained despite light demand. Contracting period practically over. Export business remarkable and port record here is broken.**

There is little or no new business. The contracting season is practically at a close and the coal men are urging coal forward on contract obligations. Despite the light demand prices were fairly well maintained. Specialized coals like Georges Creek or South Fork sell at good figures, the former bringing from \$1.35 to \$1.75 for top grade, and the latter around \$1.40. Pennsylvania line coals as a whole are bringing from 90 and 95c., for low grades, to \$1.15 and \$1.20 for good standard coals. B. & O. coals, like low-grade West Virginia and Western Maryland steam fuels are offering at 75 and 80c., with medium to best grades bringing \$1.10 to \$1.25. Fairmont gas three-quarter sells around 85c., and slack is weak at 50c.

A remarkable export business is being done out of this port. June broke all records for shipment on foreign account.

A total of 305,917 tons was dumped into vessels for foreign delivery. Italy took the largest amount, 127,744 tons, and Argentina was next with 98,516 tons. While July is not expected to equal this record, the movement will undoubtedly be heavy.

The following steamers were announced chartered for the export loading from this port:

| Vessel          | Nationality | Destination          | Rate         |
|-----------------|-------------|----------------------|--------------|
| Styliani Bebis  | Greek       | West Coast of Italy. | 2935 \$8. 28 |
| Kanaris         | Greek       | West Coast of Italy  | 9. 88        |
| Ulida           | British     | Alexandria, Egypt    | 10. 80       |
| Queenmore       | British     | Barcelona            | 8. 88        |
| Lewis H. Goward | American    | Porto Rico           |              |
| Urd             | Norwegian   | Stockholm            |              |

#### OCEAN CHARTERS

Coal charters have been reported by the "Journal of Commerce" as follows:

| Vessel                 | Nationality | From                   | To                        | Tons | Rate    |
|------------------------|-------------|------------------------|---------------------------|------|---------|
| <b>Maasdik</b>         | Dutch       | Baltimore              | Buenos Ayres <sup>2</sup> | 2935 | \$8. 28 |
| <b>Dorington Court</b> | British     | Virginia               | Italy <sup>2</sup>        | 3019 | 9. 84   |
| <b>Eleni Stathatos</b> | Greek       | Virginia               | Italy <sup>2</sup>        | 1871 | 9. 12   |
| <b>Petristsis</b>      | Greek       | Virginia               | Italy <sup>2</sup>        | 2352 | 9. 60   |
|                        |             | Philadelphia           | Barcelona                 | 7200 | 8. 88   |
| <b>Urd</b>             | Norwegian   | Baltimore              | Stockholm                 | 1968 |         |
| <b>Campello</b>        | Brazilian   | Baltimore <sup>1</sup> | Italy <sup>2</sup>        | 1605 | 10. 80  |
| <b>St. Andre</b>       | French      | Philadelphia           | St. Nazaire               | 3681 |         |
|                        | Italian     | Atlantic Range         | Italy <sup>2</sup>        | 5500 | 9. 60   |
| <b>Starfond</b>        | Norwegian   | Philadelphia           | Havana                    | 2256 |         |
| <b>Stormount</b>       | British     | Newport News           | Havana                    | 1231 |         |
| Clara Davis            |             | Virginia               | Brazil port               | 544  |         |
| Wm. E. Litchfield      |             | Norfolk                | Puerto Plata              | 472  | 3. 50   |
| <b>Ardgarroch</b>      | British     | Philadelphia           | Marseilles <sup>4</sup>   | 3160 |         |
| <b>Mariteras</b>       | Spanish     | Virginia               | Casablanca                | 1943 | 9. 60   |
| <b>Ulida</b>           | British     | Baltimore              | Alexandria                | 1988 |         |
| Augusta W. Snow        |             | Norfolk                | Rio Janeiro               | 671  |         |
| Eleanor F. Bartram     |             | Baltimore              | Rio Janeiro               | 920  |         |
| Bayard Barnes          |             | Philadelphia           | Bahair                    | 954  | 7. 75   |

Note—Steamers are indicated by **bold face type**, all others being schooners. <sup>1</sup> Or Virginia. <sup>2</sup> West Coast. <sup>3</sup> Or La Plata. <sup>4</sup> And Algiers. <sup>5</sup> Or Sicily.

#### OCEAN FREIGHTS

**Freights show little change. Orders for charters to the Plate accumulating.**

Freight conditions are practically the same as a week ago. Although a number of steamers were chartered for export coal, the rates have varied but slightly from previous quotations. A steamer was recently chartered from a United States port north of Hatteras to Genoa at \$9.36. Plate orders from here are accumulating, which is rather surprising as grain freights from the Plate have considerably improved recently.

The freight market is now quotable as follows:

| To                       | Rate        | To                        | Rate         |
|--------------------------|-------------|---------------------------|--------------|
| Havana.....              | \$2 00@2 25 | Bermuda.....              | \$3 00       |
| Cardenas or Sagua.....   | 2 75        | Vera Cruz.....            | 3. 50@3. 75  |
| Cienfuegos.....          | 2. 75@3. 00 | Tampico.....              | 3. 50@3. 75  |
| Port au Spain, Trinidad. | 3. 50@3. 75 | Rio.....                  | 8. 64        |
| St. Lucia.....           | 3. 50       | Santos*.....              | 8. 88        |
| St. Thomas.....          | 3. 00@3. 25 | Montevideo.....           | 8. 34        |
| Barbados.....            | 3. 50@3. 75 | Buenos Aires or La Plata  | 8. 40        |
| Kingston.....            | 2. 75@3. 00 | Rosario.....              | 8. 88        |
| Curacao.....             | 3. 50       | West Coast of Italy.....  | 9. 36        |
| Santiago.....            | 2. 50@3. 00 | Barcelona**.....          | 8. 40        |
| Guantanamo.....          | 2. 50@3. 00 | Valparaiso or Callao..... | 6. 75@ 7. 00 |
| Demerara.....            | 4. 25       | Marseilles.....           | 8. 64        |

Note—Rates noted in **bold face type** are only approximate. \* Consignees paying dockage dues. \*\*Spanish dues for account. W. W. Battie & Co.'s Coal Trade Freight Report.

## LAKE MARKETS

#### PITTSBURGH

**Market no better, perhaps worse. Contracts to Apr. 1 at substantially prompt prices. Slack easier. Operations 50 to 60%.**

If there has been any change in the local coal situation in the past week it has been for the worse. Operators both large and small are keener to secure business and while prices for free coal are not materially lower, more attractive quotations are made on contracts to Apr. 1, prices substantially as low as have lately been quoted for prompt. There have been free sellers of 3/4-in. to Apr. 1 at \$1.10, while mine-run for the same period has been offered at approximately \$1. At the beginning of the season Lake coal was quoted at \$1.15 and sales at \$1.10 were regarded as representing cut prices, whereas now \$1.10 can sometimes be cut.

Slack has softened further and Pan Handle is freely offered at 45c., while Youghiogheny gas slack can be had at 50c. The Baltimore & Ohio coal requirements for the Pittsburgh division are about to be let, for a twelvemonth, and there is a scramble for the business. It is understood that as low as \$1 has been bid on the twelvemonth, for mine-run, and in view of the prospective wage adjustment Apr. 1 this is



equivalent to a somewhat lower figure for the period to that date.

One or two Connellsville district operators are doing a very fair business in coal for export to Italy, and expect the business to increase, but the Pittsburgh district proper is not able to participate, having higher production cost. The following quotations represent the usual asking prices for free coal, sometimes shaded, and in a measure represent prices that might be done on contract: Slack, 45@50c.; nut and slack, 90@95c.; nut, 95c.@\$1; mine-run, \$1@1.05; ¾-in., \$1.10@1.15; 1¼-in., \$1.20@1.25, per net ton at mine, Pittsburgh district. Mines are operating at between 50 and 60% of capacity.

#### BUFFALO

**Minor signs of improvement, mostly in coke. Local business continues dull. Anthracite not improved.**

**Bituminous**—There are outside indications that the demand is improving; the stir in steel and coke has not been felt to any extent by coal, but it must follow some time. There was a general shutting down of all sorts of business over the holiday. Nothing is really active and several city coal jobbers have dropped business entirely for several days and gone off on vacations.

There is some coal on track, paying charges and there is likely to be more; the idea appears to be general that the demand is going to improve and the output is running up, with the surplus mostly unsold, to put the market in bad shape till the actual improvement appears. The bituminous prices continue on a basis of \$2.70 for Pittsburgh lump, \$2.55 for three-quarter, \$2.45 for mine-run and \$2.25 for slack. The slack trade is very dull and prices are being cut badly.

**Anthracite**—The trade is still as dull as ever. All branches are so slack, except the movement to the Lakes, that it is necessary to restrict the mining and this is being done more and more as the season advances, with small prospect of any change for the better right away. As a rule the retail dealers are letting the trade take care of itself. The movement of coal by Lake continues as active as ever, the figures slightly exceeding last year to date. For the week the total is 140,550 tons; for June, 618,236 tons and for the season, 1,420,378 tons, as against 1,409,325 tons to the end of June last season.

#### TORONTO, CAN.

**Industrial conditions show no improvement and trade the dulllest for years. Threatened stoppage in manufacture of war materials.**

Dealers state that trade has not been so quiet for many years. Industrial conditions show no sign of improvement, except as regards the activity in shell manufacture, and the continuance of this industry is threatened by the recent announcement of the British Government that hereafter no more empty shell cases will be accepted. Manufacturers have not the equipment for loading shells and hesitate about procuring it unless assured of large and steady orders. Many skilled mechanics are leaving for England. Prices for best grades are as follows: Retail anthracite egg, stove and nut, \$7.50; grate, \$7.25; pea, \$6. Bituminous, retail, steam, \$5.25; screenings, \$4.25 to \$4.50; domestic lump, \$6; cannel, \$8; wholesale f.o.b. cars three-quarter lump, \$3.56; screenings, \$2.90.

#### CLEVELAND

**Especially low prices quoted at the opening of the week. Very little coal on track and buying at the low point of the last four weeks.**

Inventories at almost all of the big manufacturing plants greatly reduced the demand for coal this week; the number closed is the largest since the first of the year inventory. It will be the latter part of next week before the demand for coal again reaches normal. There has been no attempt to cut prices this week because the places in which to put coal are so limited. A buyer can, however, get about any price he wants to pay within the range of the last two weeks.

Lake shipments are at the lowest point since the season got underway. July is usually a light month and the docks this summer are unusually well provided with coal. The Soo canal report for June shows a decrease in Lake Superior shipments as compared with June 1914. Last month 300,631 tons of hard coal was shipped as compared with 414,401 tons a year ago. The soft coal traffic totaled 1,624,535 tons as compared with 1,846,689 tons a year ago.

Prices for shipment are as follows:

|                 | Pocahontas | Youghiogheny | Bergholz | Fairmont    | Ohio No. 8  |
|-----------------|------------|--------------|----------|-------------|-------------|
| Lump.....       | \$3.45     |              |          |             |             |
| Lump, ¾ in..... |            | \$2.15       | \$1.90   | \$1.85@1.90 | \$1.85@1.90 |
| Egg.....        | 3.45       |              |          |             |             |
| Mine run.....   | 2.65       | 2.05@2.10    | 1.80     | 1.80        | 1.75@1.85   |
| Slack.....      |            | 1.45         | 1.45     | 1.45        | 1.45        |

#### COLUMBUS

**No improvement. Steam business slow and Lake trade is not increasing materially. Stocking is showing up better than formerly.**

Little or no improvement is noted in the Ohio trade. In fact some of the coal men believe it is growing worse as is shown by the closing of all of the mines of the Sunday Creek Coal Co. on the Hocking Valley side of the field. The tone of the market is not good and competition is getting very strong. There are no hopes for much improvement in the immediate future.

Stocking of domestic coal is going on but the buying is not as vigorous as was expected. Dealers are apparently loath to accumulate stocks under present conditions, relying on their ability to get shipments promptly when the demand is felt. The approach of the threshing season is expected to stimulate some buying. Retail prices are fairly well maintained and dealers are not inclined to cut prices in order to force trade.

Lake trade is likewise rather quiet. Congestion on the docks of the Upper Lake ports is still reported and the movement off the docks to the interior is limited. Some Ohio coal is going to the Northwest but the larger percentage loaded at Toledo is from West Virginia mines. The Hocking Valley docks at Toledo loaded 82,000 tons during the week ending July 2.

The steam business is dull in every locality. Buying is being done on a limited scale as consumers are not inclined to accumulate stocks. Manufacturing is still low, with the exception of war supplies. The demand for the small sizes is still good but a larger production has weakened the market.

Prices in the Ohio fields are:

|                         | Hocking | Pomeroy | Kanawha | Eastern Ohio |
|-------------------------|---------|---------|---------|--------------|
| Rescreened lump.....    | \$1.45  | \$1.50  |         |              |
| Inch and a quarter..... | 1.35    | 1.35    | \$1.30  |              |
| Three-quarter inch..... | 1.25    | 1.30    | 1.25    | \$1.20       |
| Nut.....                | 1.15    | 1.25    | 1.15    |              |
| Mine-run.....           | 1.05    | 1.10    | 1.05    | 1.00         |
| Nut, pea and slack..... | .70     | .75     | .65     | .65          |
| Coarse slack.....       | .60     | .70     | .55     | .55          |

Mines have been working at about the following percentage of full capacity:

| District      | June 12 | June 19 | June 26 | July 3 | District    | June 12 | June 19 | June 26 | July 3 |
|---------------|---------|---------|---------|--------|-------------|---------|---------|---------|--------|
| Hocking....   | 25      | 25      | 25      | 25     | Cambridge.. | 35      | 30      | 30      | 20     |
| Jackson....   | 20      | 15      | 20      | 25     | Masillon... | 40      | 35      | 30      | 15     |
| Pomeroy....   | 50      | 50      | 45      | 30     | Eastern O.. | 30      | 45      | 50      | 40     |
| Crooksville.. | 30      | 30      | 25      | 55     |             |         |         |         |        |
|               |         |         |         |        | Average..   | 33      | 33      | 32      | 30     |

#### CINCINNATI

**Continued dullness, with much surplus coal, has resulted in frequent heavy price concessions, on both contract and spot coal. No early improvement can be expected.**

Some ruinous prices have brought the market in this vicinity very close to demoralization, as far as actual business is concerned. When four-inch lump coal is offered at less than a dollar a ton on a contract, as it was in this vicinity recently, it is apparent that the market is in a bad way. Nut and slack can, of course, be had at much lower figures, especially for spot coal, which has to find buyers at any price.

These factors have only increased the indifference of buyers strengthening their belief that there is no use in tying themselves up on contract. The technical position of the market is regarded as fundamentally strong, in view of the slenderness of reserve stocks everywhere, but the present market is completely flat and will apparently recover slowly.

#### LOUISVILLE

**Beginning of the stocking movement the only encouraging factor in the situation. Prices varying over a wide range.**

Market conditions in Kentucky are showing something of an improvement, with the nearer approach of the end of July, when the retailers' stocking operations begin in earnest. The first part of the month saw a considerable improvement in the number and tone of inquiries and these promised fairly well. Industrial conditions and requirements are showing no particularly extended improvement; whenever a buyer appears he is bombarded from all sides by sales representatives.

Prices show a wide range, eastern Kentucky block varying from \$1.25 to \$2, according to quality, etc., and all other grades based on these prices. Nut and slack ranges from 25 to 65c. a ton. Pea and slack in Western Kentucky are very scarce, due in a considerable measure to the fact that the Illinois Central is taking straight run-of-mine coal and not screened coal as formerly was the case.

#### BIRMINGHAM

Both steam and lump coal show improvement. The demand for steam coal, especially, is much larger than for several months, while lump coal shows a very healthy increase. Blacksmith coal is normal.

## COKE

### CONNELLVILLE

**Independents advance wages to Frick scale prompted by some labor troubles. Market dull and unpromising. Temporary firmness in spot furnace on account of holiday.**

The independent operators that made wage reductions last year, largely in the early part of the year, have been forced to return to the Frick scale. The strike of the Washington Coal & Coke Co. operatives week before last, resulting in their being granted the full Frick scale, showed the other operators that they would have to restore the old wages, or lose men if not encounter strikes, and one by one they have announced the restoration, the leading independent, W. J. Rainey, also joining the group. Thus the operators are given higher costs, by perhaps 10c. a ton, while the coke market affords them no better opportunities.

Consumers are showing very little interest in contract coke and the consumptive prospects are not particularly bright. Late last week two furnaces that were using merchant coke blew out, one at Steubenville, a steel works stack, and the merchant furnace at Girard. As a rule it is only the steel works that make their coke that are increasing their furnace operations. Late last week spot furnace coke stiffened 10c. a ton, on account of the approaching holiday and it is possible that later this week enough furnaces will find themselves short of coke to bid up the spot market temporarily. Most shippers, however, have increased their shipments somewhat, and have also accumulated some coke on track. Foundry coke is rather quiet again, and the total quantity contracted for the twelvemonth beginning July 1 is unusually small. The market is quotable at \$1.60 for spot furnace, \$1.75 for contract furnace to Jan. 1, \$2@2.50 for spot foundry and \$2.20@2.50 for contract foundry, per net ton at ovens.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended June 26 at 355,478 tons, an increase of 6968 tons, and shipments at 346,377 tons, a decrease of 5399 tons.

**Baltimore**—Coke is still more or less a drug on the market like the less desirable grades of coal. Connellsville 72 hr. is offered as low as \$2.30, with 48-hr. at \$1.65. West Virginia 72-hr. sells at about \$2 to \$2.15, and 48-hr. at from \$1.55 to \$1.60.

**Buffalo**—There is considerably more activity in coke than for some time and the output is already increasing. Some members of the trade report an advance in price, while others are positive that none has taken place in this market. An advance must occur soon if the reports of large increase of output continue. Prices are stronger on the basis of \$4.25 for best 72-hr. Connellsville foundry and \$3.30 for stock coke.

**Chicago**—Spot sales of coke are less than last week, but contract shipments have been moving in steady volume. Further advances in steel products incline wholesalers here to the view that a better era is at hand. Domestic coke was somewhat slow the past week. Prices are as follows: Byproduct, \$4.65@4.85; Connellsville, \$4.75@4.90; Wise County, \$4.75; gas coke, \$3.75@4.90, furnace, \$4.65@4.75.

## MIDDLE WESTERN

### GENERAL REVIEW

**Prices for Indiana and Illinois coals narrowing with better buying of domestic sizes reported. Screenings slightly softer. All-rail anthracite shows no better demand.**

Some life has been injected into the domestic trade the past week due to increased buying by retailers. An advance in circular prices has occurred on all Western coals, and the present attitude of shippers is to consider these list prices as the minimum. Most mines are still operating on an average of not more than three days per week, except in southern Illinois where there has been better running time.

The anticipated recovery in screenings did not materialize, and they have again declined an average of 5c. per ton on current shipments; it is apparent that this is due to increased production of coarse sizes and the strike of the building trades in Chicago, which has closed down factories, causing decreased consumption of screenings and steam coals. No revival of country buying has transpired so far, mainly due it is said to scarcity of ready cash in the country districts. The purchase of threshing coal this year has been in less volume due to the extended use by farmers of straw burners and

gasoline tractors for power. There has been a further increased movement from southern Illinois mines to North-western markets. More West Virginia and Kentucky fine coal is under contract for movement into northern Indiana points than ever before. Contracts have been let for Kentucky screenings in northern Indiana and southern Michigan at prices as low as 65c. per ton at the mines.

### CHICAGO

**Some general price advances on the first of the month. Market still continues dull. Eastern coals gaining strength. Anthracite unusually dull.**

Franklin County domestic sizes advanced to \$1.50 on the first and shippers are firmly holding for this price. Screenings have declined about 10c. per ton from this field.

It is expected that the Harrisburg and Saline County operators will closely follow the lead of the Franklin County operators in advancing prices. Screenings from these mines have eased off at least 5c. per ton during the week.

Aside from a little increase in domestic sales, the situation at the Indiana mines is devoid of interest. Prices for domestic sizes remain stationary. Contracts are still being made largely at last year's figures, and in some cases less.

Clinton operators advanced domestic prices, and report a slightly better demand for these coals. Steam coals from these mines, however, are weaker.

No change has occurred in the demand for Springfield district coals except that screenings are slightly softer. Domestic lump has been marked up to \$1.50, effective July 1.

The smokeless trade is still conspicuously firm, and Western shipments are closely restricted. Pennsylvania smokeless is moving slowly, but the operators are sacrificing no coal in the open market and prices are firm at June circular.

Better inquiries are reported for July delivery of Hocking, and increased strength is noted in all sizes.

Eastern Kentucky coals are still on the bargain counter, and prices quoted are on shipments from the mines, spot sales in many cases being made at considerable less figures.

The dealers did not avail themselves of the low prices prevalent in June for anthracite to the extent anticipated, and while the latter part of the month showed some increased buying, it was not of the normal strength of other years. Notwithstanding the market is unsatisfactory, prices are well maintained with a few minor exceptions. The July outlook is decidedly uncertain. Prices f.o.b. cars Chicago are as follows:

|                          |                |            |              |
|--------------------------|----------------|------------|--------------|
| Chestnut.....            | \$6.80 to 6.90 | Grate..... | 6.30 to 6.40 |
| Egg and stove.....       | 6.55 to 6.65   | Pea.....   | 5.50 to 5.55 |
| Yard prices 25c. higher. |                |            |              |

Quotations in the Chicago market are as follows:

|   | Williamson and<br>Franklin Co. | Springfield | Sullivan    | Clinton     | Knox and<br>Greene Cos. |
|---|--------------------------------|-------------|-------------|-------------|-------------------------|
| Lump.....   | \$1.35@1.50                    | \$1.25@1.35 | \$1.35@1.50 | \$1.25@1.35 | \$1.40                  |
| Steam lump .....  | 1.15@1.25                      | 1.10@1.25   | 1.10@1.25   | 1.15@1.20   | 1.25@1.30               |
| 24-in. lump. ....   | .....                          | .....       | 1.25@1.30   | 1.25@1.35   | 1.30                    |
| 14-in. lump. ....   | .....                          | .....       | 1.20@1.25   | 1.15@1.25   | .....                   |
| Egg.....  | 1.25@1.50                      | 1.25@1.35   | 1.15@1.25   | 1.10@1.25   | 1.15@1.25               |
| Nut.....  | 1.25@1.50                      | 1.15@1.25   | 1.00@1.10   | .95@1.00    | 1.00@1.05               |
| No.1washed  | 1.35@1.50                      | .....       | 1.50@1.60   | .....       | .....                   |
| No.2washed  | 1.25@1.35                      | .....       | 1.40        | .....       | .....                   |
| No. 1 nut.....  | 1.25@1.50                      | .....       | .....       | .....       | .....                   |
| No. 2 nut.....  | 1.20@1.35                      | .....       | .....       | .....       | .....                   |
| Mine-run...   | 1.05@1.25                      | 1.00@1.05   | .85@1.00    | .90@1.00    | .85@1.05                |
| Screenings...   | .80@ .90                       | .70@ .80    | .65@ .75    | .70@ .75    | .75@ .80                |
| <b>Harrisburg &amp; Saline Co. E. Kentucky W.Va.Smok'l. Smokeless Hocking</b> |                                |             |             |             |                         |
| Lump.....   | \$1.25@1.35                    | \$1.25@1.60 | \$1.90@2.00 | \$1.35@1.50 | \$1.25@1.50             |
| 14-in. lump. ....   | 1.10@1.25                      | 1.15@1.40   | .....       | 1.10        | 1.25@1.35               |
| Egg.....  | 1.25@1.35                      | 1.10@1.25   | 1.90@2.00   | 1.35@1.50   | 1.00@1.10               |
| Nut.....  | .....                          | .....       | 1.40@1.60   | 1.20@1.35   | 1.00@1.10               |
| No. 1 nut.....  | 1.25@1.35                      | .....       | .....       | .....       | .....                   |
| No. 2 nut.....  | 1.15@1.35                      | .....       | .....       | .....       | .....                   |
| Mine-run...   | 1.00@1.10                      | .....       | 1.10@1.25   | 1.10@1.25   | .95                     |
| Screenings...   | .80@ .90                       | .65@ .80    | .....       | .....       | .....                   |

**Receipts by Lake**—Arrivals of coal by Lake for June and the season to date for this year and last year were as follows:

| From                     | 1915    |         | 1914    |         |
|--------------------------|---------|---------|---------|---------|
|                          | Hard    | Soft    | Hard    | Soft    |
| Buffalo.....             | 90,306  | 10,400  | 61,203  | .....   |
| Owego.....               | 15,625  | .....   | 23,036  | .....   |
| Toledo.....              | .....   | 18,730  | .....   | 63,467  |
| Cleveland.....           | .....   | 20,808  | .....   | 12,640  |
| Sandusky.....            | .....   | 10,325  | .....   | 49,236  |
| Erie.....                | 27,044  | .....   | 7,222   | .....   |
| Ashtabula.....           | .....   | .....   | .....   | .....   |
| June total.....          | 135,035 | 60,263  | 91,461  | 125,343 |
| Total season to date.... | 258,246 | 163,570 | 171,253 | 256,416 |

### INDIANAPOLIS

**Thresher demand causes some improvement. Decline in screenings expected. Encouraging crop outlook.**

The domestic lump trade shows some improvement due to the opening of the demand by threshermen, now busy with the wheat crop and soon to handle the oats. Whether this



will increase the supply of slack enough to weaken the price remains to be seen; there is no doubt buyers of screenings are expecting a decline. There is no indication yet of weakness. Other grades of coal are down to their minimum, run-of-mine ranging from \$1 to \$1.20, according to quality.

The war-material industries of the state continue at capacity and an additional plant or two swings into this business weekly. There is pronounced improvement in operations at Gary, and allied industries feel a reflected benefit. In spite of material damage by insects and storms, Indiana will probably have 40,000,000 bushels of wheat, her oats crop promises to be the largest in years, and she raises 200,000,000 of corn, which is coming along satisfactorily. Coal men are counting on this to bring about a decided improvement in due time.

Retail dealers seem to be stocking up with Eastern coals in a normal way for the month of July. Summer prices on these still prevail. There is a fair movement of these coals from the yards into consumer's bins.

#### ST. LOUIS

**Increase in the local circular. Prices better maintained and better feeling in the trade.**

July 1 brought a welcome and longed-for strengthening of prices in the St. Louis market, particularly in the standard grades, where the prices have been demoralized for the past several weeks. During the past week intimations were received by the Kolb Coal Co. from some of the independent operators who are alleged to have brought about the recent price-cutting, that they were anxious to get better prices; the deadlock was broken by the Kolb Co. announcing, effective July 1, an advance on 2-in. shaker screened lump coal from 77½ to 85c. per ton f.o.b. mine. The Miller Coal & Coke Co. at the same time announced an advance of the same amount on standard lump. While the changes in other grades were not so pronounced there was a better feeling all along the line except in screenings, which fell off somewhat.

The market is now quotable as follows:

|                   | Wilm. & Frnk. Co. | Sparta | Mt. Olive | Standard |
|-------------------|-------------------|--------|-----------|----------|
| 6-in. lump.....   | \$1.25@1.35       | \$1.25 | \$1.25    | \$0.95   |
| 2-in. lump.....   |                   | .90    | 1.25      | .85      |
| 3-in. lump.....   |                   |        | 1.15@1.25 |          |
| 3x6 egg.....      | 1.25@1.35         |        |           | .80      |
| No. 1 nut.....    | 1.25@1.35         |        |           |          |
| No. 2 nut.....    | 1.15@1.20         |        |           | .80      |
| No. 1 washed..... | 1.25@1.35         |        | 1.35      |          |
| No. 2 washed..... | 1.15@1.25         |        |           |          |
| No. 3 washed..... | 1.20              |        |           |          |
| No. 4 washed..... | 1.15              |        |           |          |
| No. 5 washed..... | .80               |        |           |          |
| Screenings.....   | .70@.75           |        |           | .75@.77½ |

#### PORTLAND, ORE.

**Summer storage prices in effect and but little business is transacted, as expected. City buys 2000 tons of coal and briquettes for schools.**

Summer prices have been put in effect and Washington coals are now selling at \$6.50 per ton in larger than three-ton lots or \$7 per ton in one-ton lots. Wyoming is selling at \$9 straight. These quotations cover deliveries within the first zone. The city has placed orders for 2000 tons of coal and coal briquettes, with three firms, this being the largest order placed here for some time. (See contract No. 362). Indications are that there will be very little if any coal imported here from Australia the coming fall and winter.

## PRODUCTION AND TRANSPORTATION STATISTICS

#### ANTHRACITE SHIPMENTS

Anthracite shipments for June and the first six months of 1914-15 were as follows:

|                        | June    |           | 6 Months  |           |
|------------------------|---------|-----------|-----------|-----------|
|                        | 1915    | 1914      | 1915      | 1914      |
| Phila. & Reading.....  | 852,411 | 944,816   | 5,413,271 | 6,031,648 |
| Lehigh Valley.....     | 988,253 | 1,325,982 | 6,299,848 | 6,155,075 |
| Cent. R.R. N.J.....    | 609,127 | 839,514   | 3,798,849 | 4,389,087 |
| Del. Lack. & West..... | 888,399 | 941,868   | 4,568,608 | 4,598,506 |
| Dcl. & Hudson.....     | 697,894 | 661,248   | 3,803,792 | 3,415,875 |
| Pennsylvania.....      | 446,690 | 470,652   | 2,969,954 | 3,217,088 |
| Erie.....              | 693,089 | 738,175   | 3,747,082 | 3,990,027 |
| Ont. & Western.....    | 140,239 | 207,931   | 993,900   | 1,148,483 |

Total..... 5,316,102 6,130,186 31,595,304 32,945,789

Stocks at Tidewater June 30 were 739,729 tons.

#### LAKE SHIPMENTS

Shipments through the Sault Ste. Marie Canals for June were: Bituminous, 1,624,535; anthracite, 300,631 tons.

#### SOUTHWESTERN TONNAGE

The following is a statement of the coal shipments by months from the four Southwestern states for the past two years to and including April of the current year:

| 1913           | Missouri  | Kansas    | Arkansas  | Oklahoma  | Total      |
|----------------|-----------|-----------|-----------|-----------|------------|
| March.....     | 259,270   | 492,304   | 113,354   | 257,162   | 1,122,090  |
| April.....     | 204,255   | 444,142   | 136,153   | 246,155   | 1,030,705  |
| May.....       | 186,366   | 407,124   | 130,020   | 252,901   | 976,411    |
| June.....      | 187,723   | 412,371   | 145,306   | 255,481   | 1,000,881  |
| July.....      | 198,723   | 465,761   | 163,185   | 272,124   | 1,099,793  |
| August.....    | 178,949   | 451,968   | 178,904   | 289,949   | 1,099,770  |
| September..... | 250,763   | 474,237   | 201,782   | 297,213   | 1,223,995  |
| October.....   | 317,466   | 609,827   | 209,693   | 340,915   | 1,477,901  |
| November.....  | 290,958   | 571,165   | 187,703   | 346,064   | 1,395,890  |
| December.....  | 266,335   | 540,872   | 138,678   | 324,728   | 1,270,613  |
| Total....      | 2,924,728 | 5,782,194 | 1,943,861 | 3,534,842 | 14,185,625 |
| 1914           |           |           |           |           |            |
| January....    | 277,609   | 526,300   | 162,056   | 333,125   | 1,299,090  |
| February....   | 259,270   | 492,304   | 113,354   | 257,162   | 1,122,090  |
| March.....     | 263,593   | 501,841   | 165,037   | 296,484   | 1,226,955  |
| April.....     | 179,723   | 378,192   | 87,002    | 239,443   | 884,360    |
| May.....       | 165,395   | 370,097   | 95,749    | 241,180   | 872,421    |
| June.....      | 185,731   | 490,561   | 133,350   | 273,692   | 1,083,334  |
| July.....      | 177,093   | 513,312   | 117,016   | 234,648   | 1,042,069  |
| August.....    | 201,992   | 453,675   | 157,803   | 244,103   | 1,057,573  |
| September..... | 233,195   | 569,114   | 160,233   | 254,973   | 1,217,515  |
| October.....   | 280,958   | 632,784   | 186,990   | 319,439   | 1,420,171  |
| November.....  | 252,105   | 591,383   | 141,554   | 332,515   | 1,317,557  |
| December.....  | 285,547   | 643,213   | 123,737   | 352,267   | 1,404,764  |
| Total....      | 2,762,211 | 6,162,776 | 1,643,881 | 3,379,031 | 13,947,899 |
| 1915           |           |           |           |           |            |
| January....    | 276,641   | 637,708   | 125,275   | 371,309   | 1,410,993  |
| February....   | 225,996   | 492,320   | 102,451   | 302,026   | 1,122,793  |
| March.....     | 271,374   | 522,242   | 90,252    | 243,505   | 1,127,373  |
| April.....     | 196,032   | 410,565   | 80,118    | 181,873   | 868,588    |

#### RATE DECISION

**I. C. C. No. 7409—Reeves Coal Co. vs. Chicago, Milwaukee & St. Paul Ry. Co.**

Complainant ordered a shipment reconsigned, provided the lowest rate between original point of origin and final point of destination would apply. Reconsignment was effected and lawful charges, higher than those which would have accrued at the lowest rate from point of origin to final destination, were collected; Held, That the case does not differ materially from one involving merely a misquoted rate. Complaint dismissed.

## FOREIGN MARKETS

#### GREAT BRITAIN

**Situation very uncertain and important developments expected. Restrictions of exports continues.**

**June 25**—The situation in the coal industry has many interesting features, but they are not of a character to encourage or facilitate business. Much uncertainty for instance, prevails as to what the Government may think proper to do with regard to coal prices and in view of the further negotiations between colliery representatives and the Board of Trade in London this week, an early authoritative announcement on the subject is expected, but the inland trade has received something of a check pending that. Then there is the question as to whether there is any likelihood of the suspension of the Eight Hours' Act, which apparently has been under the consideration of the Miners' Federation of Great Britain this week, while in Wales trouble over the non-Unionist difficulty and the new agr. ment causes anxiety. Finally we have continued complaints concerning the restriction of exports, the main effect of which appears to be the depression of prices for the benefit of our customers in neutral countries, although, of course, the home market for some qualities has also been weakened. Altogether the situation is far from satisfactory, and important developments are expected.—The Iron & Coal Trades Review.

**June 24**—There is still general quietness in all branches of the steam coal trade. Shipments are slightly improving. Prompt supplies can be had at several shillings below current quotations. Quotations are approximately as follows:

|                       |             |                          |             |
|-----------------------|-------------|--------------------------|-------------|
| Best Welsh steam..... | Nominal     | Best Monmouthshires....  | \$6.72@6.96 |
| Best seconds.....     | Nominal     | Seconds.....             | 6.24@6.72   |
| Seconds.....          | \$6.72@7.20 | Best Cardiff smalls..... | 4.80@5.04   |
| Best dry coals.....   | 6.72@7.20   | Cargo smalls.....        | 3.96@4.08   |

The prices for Cardiff coals are f.o.b. Cardiff, Penarth or Barry, while those for Monmouthshire descriptions are f.o.b. Newport, both net, exclusive of wharfage.

**Freights**—Chartering is very quiet and rates are approximately as follows:

|                 |        |                 |        |                     |        |
|-----------------|--------|-----------------|--------|---------------------|--------|
| Gibraltar.....  | \$3.84 | Naples.....     | \$6.00 | St. Vincent.....    | \$4.80 |
| Marseilles..... | 4.83   | Alexandria..... | 5.76   | Rio de Janeiro..... | 6.36   |
| Algiers.....    | 3.86   | Port Said.....  | 5.64   | Monte Video.....    | 5.76   |
| Genoa.....      | 5.88   | Las Palmas..... | 4.32   | River Plate.....    | 6.00   |

## Coal Contracts Pending

*The purpose of this department is to diffuse accurate information of prospective purchases and prices with a view to affording equal opportunity to all, promoting market stability and inculcating sound business principles in the coal trade.*

For the official advertisements of bids wanted see the **Contracts-to-Be-Let** Section on Page 20.

†Indicates contracts regarding which official information has been received.

### Recast

In the following table we give a list of all old contracts coming up for consideration during the ensuing week. The table gives our contract number, the name of the purchaser, city, tonnage and page on which the detail notice appeared.

| No. | Purchaser            | City          | State | Tonnage  | Page |
|-----|----------------------|---------------|-------|----------|------|
| 817 | Barrett Varnish Co.  | Chicago       | Ill.  | 3 (cars) | 1948 |
| 856 | Board of Education   | Kansas City   | Mo.   | 7000a    | 40   |
| 950 | Board of Education   | Linden        | N. J. | 200a     | 40   |
| 969 | County Commissioners | Hillboro      | N. D. | 200b     | 41   |
| 988 | Government Engineer  | Atlantic City | N. J. | 3000b    | 42   |

a Indicates anthracite coal. b Indicates bituminous.

### Supplemental Notes

Under this heading additional or supplemental information regarding old contracts appears, together with the page number of the original notice.

†No. 726—**New York**—All the bids on this contract (Vol. 7, pp. 916, 955, 1004, 1084, 1088, 1128), which provides for furnishing the local Fire Department with coal, have been rejected, and the contract will be readvertised. Address Fire Comr. Robt. Adamson, Municipal Bldg., New York City.

†No. 855—**Wilmington, N. C.**—This contract (Vol. 7, p. 1085), which provides for furnishing the United States Engineers at this place with about 13,000 tons of bituminous coal was bid on as follows:

| Bidder                                | Wilmington ton | South- port* ton | F.o.b. Wash- ing- ton | Cars at New- bern ton | More- head ton | B.t.u. |
|---------------------------------------|----------------|------------------|-----------------------|-----------------------|----------------|--------|
| Tons.                                 | 9000           | 2000             | 300                   | 700                   | 1000           |        |
| The Springer Coal Co.                 | \$3.30         | \$3.85           | \$3.30                | \$3.30                | \$3.65         | 14,600 |
| Cooper-Pocahontas Co.                 | 3.30           | 3.75             | 3.30                  | 3.30                  | 3.65           | 14,750 |
| The S. J. Patterson Co.               | 3.27           |                  | 3.27                  | 3.27                  | 3.62           | 14,500 |
| Smokeless Fuel Co.                    | 3.30           | 3.75             | 3.30                  | 3.30                  | 3.65           | 15,100 |
| The Chesapeake & Ohio Coal & Coke Co. | 3.25           | 3.70             | 3.25                  | 3.25                  | 3.60           | 14,900 |
| Alternate bid†                        | 3.20           | 3.65             | 3.20                  | 3.20                  | 3.55           |        |
| Netherington & Co.                    | 3.05           | 3.46             | 3.05                  | 3.05                  | 3.37           | 14,800 |
| The Nottingham & Wrenn Co.            | 3.28           | 3.70             | 3.28                  | 3.28                  | 3.63           | 14,779 |
| Maryland Coal & Coke Co.              | 3.25           |                  | 3.25                  | 3.25                  | 3.60           | 14,850 |
| Commercial Coal Co., Inc.             | 3.39           | 3.94             | 3.44                  | 3.44                  | 3.79           | 14,600 |
| Pocahontas Fuel Co.                   | 3.30           |                  | 3.30                  | 3.30                  | 3.65           | 15,100 |
| The C. Y. Blake Co.                   | 3.30           | 3.75             | 3.30                  | 3.30                  | 3.65           | 14,850 |
| Johns Bros., Inc.                     |                |                  | 3.25                  | 3.25                  | 3.60           | 14,850 |
| Eastern Coal & Export Corp.           | 3.30           | 3.80             | 3.30                  | 3.30                  | 3.65           | 14,900 |
| Jewette Bigelow & Brooks              | 3.30           | 3.65             | 3.30                  | 3.30                  | 3.65           | 14,900 |

\*Delivered in bins. †Without restrictions as to guarantees.

Address Maj. H. W. Stickle, Corps of Engrs., U. S. Engineers' Office, Wilmington, N. C.

†No. 870—**Peoria, Ill.**—Bids on this contract (p. 1086) were received until 5 p.m., June 25. The successful bidder will be required to furnish a bond for \$4000, and each bid is to be accompanied by a certified check for \$200. Address Secy. Anna Rynearson, Bd. of School Inspectors, Room 203, City Hall, Peoria, Ill.

†No. 888—**Fairbury, Neb.**—This contract (Vol. 7, p. 1086), which provides for furnishing the G. D. Meyers Water & Light Commission at this place with about 2000 tons of coal will be let some time in July. The price as noted in the previous item, \$2.95 should have read \$3.75 per ton. Address G. D. Meyers Water & Light Commission, Fairbury, Neb.

†No. 892—**Jacksonville, Fla.**—This contract (Vol. 7, p. 1086), which provides for furnishing the U. S. Engineers' Office at this place with about 4000 tons of coal was bid on as follows: Logan Coal & Supply Co., Berwind's New River, \$4.42; Weller Coal Co., Admiralty smokeless, \$4.85; Clinchfield Fuel Co., Clinchfield coal, \$4.24; Logan Coal Co. (exclusive of

freight), Pratt lump, \$2.75. Bids were also open for delivery at Tampa, the only bidder being the Tampa Coal Co. at \$6.15 for Superior Pocahontas. Address U. S. Engineers' Office, Jacksonville, Fla.

†No. 893—**Milwaukee, Wis.**—Bids have been received on this contract (Vol. 7, p. 1086), which provides for the requirements of the Lighthouse Service, 12th District, as follows:

| Bidder                                   | Amount   | Place of delivery.                |
|--|----------|-----------------------------------|
| Milwaukee-Western Fuel Co. (Milwaukee)   | \$800.00 | * Milwaukee, Wis., Anth.          |
| Pennsylvania Coal & Sup. Co. (Milwaukee) | 8632.80  | * Milwaukee, Wis., Bit.           |
| Callaway Fuel Co. (Milwaukee)            | 815.00   | * Milwaukee, Wis., Anth.          |
| Pittsburgh Coal Co. (Chicago)            | 540.00   | * Chicago, Ill., Bit.             |
| Charlevoix Coal & Wood Co. (Charlevoix)  | 2464.50  | * Charlevoix, Mich., Anth. & Bit. |
| Wm. H. Fugh (Racine)                     | 337.50   | * Racine, Wis., Bit.              |
| C. Reiss Coal Co. (Sheboygan)            | 908.00   | * Sheboygan, Wis., Bit.           |
| Central West Coal Co. (Menominee)        | 1143.75  | * Menominee, Mich., Bit.          |
| George Kemp (Sault Ste. Marie)           | 556.50   | * Sault Ste. Marie, Mich., Bit.   |
| Perry Coal Co. (Sault Ste. Marie)        | 567.00   | * Sault Ste. Marie, Mich., Bit.   |
| Mich. Lumber Co. (Manistee)              | 866.00   | * Manistee, Mich., Bit.           |
| C. B. Oliver (Escanaba)                  | 1164.00  | * Escanaba, Mich.                 |
| Marinette Fuel & Dock Co. (Marinette)    | 1214.25  | * Marinette, Wis.                 |

Recommended that the above bids be accepted as indicated.\*

†No. 937—**Amsterdam, N. Y.**—About a dozen bids were submitted on this contract (Vol. 7, p. 1127), all of which were apparently the same as follows: Grate, \$6.50; egg, stove and nut, \$6.75; pea, \$5.75. An extra charge of 25c. per ton will be made in event the coal has to be carried, and a discount of 25c. per ton will be allowed where payment is made by the tenth of the month succeeding delivery. Deliveries are to begin Sept. 1. Address Clk. Leslie L. Bedd, Bd. of Edu. High School Bldg., Amsterdam, N. Y.

### New Business

No. 990—**Kansas City, Mo.**—The General Hospital will let a contract for 100 tons of mill run coal Aug. 1. The board of directors makes the contracts. Address Board of Directors, General Hospital, Kansas City, Mo.

No. 991—**Storrs, Conn.**—Sealed bids will be received until noon, July 20, for furnishing the Connecticut Agricultural College with coal as follows: 1000 tons anthracite egg; 200 tons pea; 100 tons stove; 50 tons nut. Bids should be made f.o.b. Eagleville, Conn., and deliveries are to be made during the period of Oct. 1 of the current year to Mar. 31 of next year. Separate bids should be submitted on each size. Address Connecticut Agricultural College, Storrs, Conn.

Contract No. 922—**Rock Island, Ill.**—The contract with the Standard Oil-Cloth Co. for two cars of screenings per week expires on Apr. 1. This company will contract in August for the supply for the following season. Address Standard Oil-Cloth Co., Rock Island, Ill.

No. 993—**Kansas City, Mo.**—The Southwestern Milling Co. buys its coal in the open market and will be interested in offers. Two cars a month of mill run are used. Address Purchasing Agent, Southwestern Milling Co., Kansas City, Mo.

†No. 994—**Canton, Ill.**—Sealed bids were received by the local City Government until 2 p.m., June 15, for furnishing coal required at the Ave. D. Pumping Station, during the year beginning July 1. Mine-run and screenings will be required. The successful bidder must furnish a bond for \$500 guaranteeing the faithful performance of the contract. Address City Clk. Joseph Waugh, Canton, Ill.

†No. 995—**Cedar Rapids, Ia.**—The Board of Education at this place will receive bids until 7:30 p.m., July 13, for furnishing coal as follows: 5000 tons of fancy Iowa or Illinois steam coal delivered on sidings; 30 tons lump coal to be delivered as designated; 60 tons of anthracite to be delivered in bins on or before Sept. 1. All bids must be submitted on blank forms which may be obtained on application. Bids will be received at the same time for delivery of the coal from the cars to the various buildings. Address Secy. H. L. Cooper, Cedar Rapids, Ia.



**No. 996—Baltimore, Md.**—The American Smelters Securities Co. is completing a new brass foundry at this place, for which it is now negotiating for the fuel supply. The plant will be in operation in about two months, and shipments are scheduled to start Sept. 1. About 2000 tons of egg coal will be required. Address Purchasing Agent, American Smelters Securities Co., 120 Broadway, New York City.

**+No. 997—Salina, Penn.**—The School Board for Kiskiminetas Township will receive bids until 10 a.m., July 14, for furnishing the coal required at the 20 schools in the district. Address W. J. McCauley, Bd. of Edu., Salina, Penn.

**+No. 998—Kansas City, Kan.**—The municipal contract for furnishing the city, water-works plant, electric-light plant, city buildings, etc., will be let about Aug. 1, though no notices have as yet been sent out. About 20,000 tons of mill-run coal will be required. Address Pur. Agt. Amos Riddle, City Hall, Kansas City, Kan.

**+No. 999—Brookville, Ohio.**—The Board of Education at this place will receive bids until 7:30 p.m., July 12, to furnish its annual coal requirements for the fiscal year beginning July 20. Address Clk. J. M. Grau, Bd. of Edu., Brookville, Ohio.

**1000—Independence, Mo.**—The Independence Ice & Cold Storage Co. at this place is considering a contract for furnishing its coal supply, which aggregates about two cars per month. It uses slack and mill-run coal, and at present is buying in the open market. Address Mgr. A. D. Hatton, the Independence Ice & Cold Storage Co., Independence, Mo.

**+1001—Wilkes-Barre, Penn.**—The Board of Education at this place usually contracts for its fuel requirements some time in August. The call for bids is advertised and the business is let on a competitive basis. About 4000 tons of coal is required, with prices varying from \$2.40 to \$4.20 per ton. Address Board of Education, Wilkes-Barre, Penn.

**+1002—Lafayette, Ind.**—The Board of Public Works at this place will receive bids until July 14 for furnishing the coal required during the ensuing year at the local water-works, crematory and fire department. Address Committee on Supplies, Board of Public Works, Lafayette, Ind.

**1003—Kansas City, Mo.**—The Wesley Hospital at this place is receiving bids for about 150 tons of bituminous coal. The contract will be let about Aug. 1. Address Board of Directors, Wesley Hospital, Kansas City, Mo.

**1004—Mitchell, S. D.**—The County Commissioners will receive bids until 2 p.m., July 16, for furnishing Davison County with the following grades of coal: Pocahontas lump to be delivered at the Court House; same to be delivered to any part of the city; Hocking lump delivered to Court House; anthracite, egg and stove delivered to any part of city. Address County Audr. J. M. Crampton, County Comrs., Mitchell, S. D.

**1005—Cleveland, Ohio.**—The Board of Education at this place will receive bids until noon, Aug. 2, for furnishing and delivering coal to the various school buildings during the seasons of 1915 and 1916. The approximate tonnages are as follows: Anthracite, 300 tons; bituminous lump, 3000 tons; nut, 2500 tons; slack, 25,000 tons; semibituminous mine-run, 4000 tons; lump, 4000 tons. Specifications and blank forms for bidding may be obtained on application. Address Dir. of Schools F. G. Hogan, School Headquarters, Rockwell and East Sixth St., Cleveland, Ohio.

**1006—Kansas City, Kan.**—The local plant of Proctor & Gamble Manufacturing Co., dealer in soap, will be in the market about Aug. 1 for 200 tons of bituminous coal. Address Purchasing Agent, Proctor & Gamble Mfg. Co., 19th and Kansas St., Kansas City, Kan.

**1007—New Castle, Penn.**—The School Board at this place will contract some time in August for its annual requirements of coal. The present contract is on the following basis: 1800 tons of  $\frac{3}{4}$ -in. coal at \$2.33, 550 tons of slack at \$1.92, prices including cost of delivery to buildings. The call for bids is advertised. Address Board of Directors of School District, North St., New Castle, Penn.

**1008—Galesburg, Ill.**—The County Commissioners at this place will receive bids until 10 a.m., July 7, for furnishing the coal requirements of the Knox County Court House and Knox County Heating Plant for the year beginning July 1. Nut, slack, mine-run, egg and lump coal will be required. Bids are to include cost of delivery to the Court House and heating plant. The successful bidder will be required to give a bond guaranteeing the satisfactory performance of the contract. Address County Clk. F. L. Adams, Galesburg, Ill.

**1009—Independence, Mo.**—The Independence Stove & Foundry Co. will contract for about 12 cars of slack coal some time during August. Address Secy. E. F. Lough, Independence Stove & Foundry Co., Independence, Mo.

**1010—Kansas City, Kan.**—The Kansas City Soap Co. at this place is considering the purchase of 12 cars of mine-run and lump coal, deliveries to be made at the rate of one car per month. The company has heretofore confined its purchases to the open market. Address H. L. Feters, Kansas City Soap Co., Shawnee and Railroad St., Kansas City, Kan.

**+1011—Ritzville, Wash.**—The School Board at this place received bids until July 5 for furnishing 125 tons of coal to be delivered to the various school buildings on or before Sept. 1. Bids were particularly requested on Roslyn Cascade Special Steam coal, but will also be considered on other grades. Address Dist. Clk. John Truax, School Dist. No. 1, Ritzville, Wash.

**1012—Pleasant Hill, Mo.**—George M. Kellogg, a florist at this place, will contract for a year's supply of coal some time during the current month. About 20 cars of slack coal per month will be required. Address Pur. Agt. N. F. Parker, George M. Kellogg, Pleasant Hill, Mo.

**+1013—Jackson, Miss.**—Bids were received by the Mississippi State Penitentiary until noon, July 6, for furnishing two carloads of coal for the Oakley and Parchman convict farms. The bids were requested f.o.b. the destination with freight prepaid. Address Secy. J. J. Coman, Mississippi State Penitentiary, Jackson, Miss.

**+1014—Keewatin, Minn.**—Sealed bids were received by the Town Government until 8 p.m., June 30, for furnishing approximately 500 short tons of coal. Deliveries are to be made between July 14 and Jan. 13. Bids were requested on Elkhorn, Ky., lump, mine-run, screenings, Youghiogheny screened lump, mine-run, screenings. Address Village Clk. C. W. Extrum, Keewatin, Minn.

**1015—Kansas City, Mo.**—The City Ice Co. is said to be considering entering into short contracts for its coal requirements. About one car per day is required and it is stated that it is considering purchases in 30-car lots. Address F. D. Whiting, City Ice Co., 21st and Campbell St., Kansas City, Mo.

**+1016—Bel Air, Md.**—The Board of School Commissioners for Harford County received bids until noon, July 7, for furnishing its annual coal requirements. No. 2 screened anthracite coal is required almost exclusively. All deliveries are to be completed on or before Oct. 1. Address Secy. Charles T. Wright, Bd. of School Comrs., Bel Air, Md.

**1017—Mobile, Ala.**—The city will receive bids until noon, July 14, 1915, for furnishing a year's supply of coal, to be delivered at the Spring Hill and Bienville pumping stations. Copy of specifications can be had by applying to Supt. C. W. Soost, of Mobile Water Works. Bids must be accompanied by guaranteed analysis. Address Comr. Harry Pillans, Mobile, Ala.

**1018—Kansas City, Mo.**—The Kelley Milling Co. at this place will probably contract about Aug. 1 for its fuel requirements, which amount to about 20 tons per day. It uses Cherokee slack coal. Address J. M. Kelley, Jr., Rochester and Park Ave., Kansas City, Mo.

**+1019—Allentown, Penn.**—The School District of North Whitehall Township will receive bids until 5 p.m., July 10, for furnishing 100 tons clean chestnut coal to be delivered to the various school buildings on or before Sept. 13. Address Secy. A. N. Kuhns, Orefield, Penn.

**+1020—Adrian, Mich.**—The State Industrial Home for Girls at this place will receive bids until noon, July 13, for furnishing about 2000 tons of domestic lump coal and 250 tons of chestnut coke. Bids should be submitted f.o.b. cars on side track at the home. Address Treas. Rolla L. Taylor, State Industrial Home for Girls, Adrian, Mich.

**1021—Kansas City, Mo.**—The Western Sash & Door Co. will contract about Aug. 1 for 20 cars of mill-run coal. Address F. J. Huttig, Western Sash & Door Co., Independence Rd. and White Ave., Kansas City, Mo.

**+1022—Chicago, Ill.**—The Municipal Tuberculosis Sanitarium received bids until noon, July 9, for furnishing the coal requirements of the Sanitarium according to the specifications on file. A certified check for \$300 was required with each bid. Address Board of Directors, Municipal Tuberculosis Sanitarium, North Crawford and Peterson Ave., Chicago, Ill.

## Contracts Awarded

**No. 650—Pittsburgh, Penn.**—This contract (Vol. 7, pp. 835, 918) has been awarded to various coal companies. Address Supt. of Supplies C. N. McKee, Fulton Bldg., Pittsburgh, Penn.

†**No. 747—Pittsburgh, Penn.**—This contract (Vol. 7, p. 917), which provides for furnishing the various pumping stations and the City Hall and Hospital, has been awarded to a number of the different local companies. Address Dir. F. P. Booth, Dept. of Supplies, 314 Oliver Bldg., Pittsburgh, Penn.

†**No. 631—Milwaukee, Wis.**—An additional award on this contract (Vol. 7, pp. 795, 876, 918), providing for the requirements of the Milwaukee Fire Department, has been made to the **Kanawha Fuel Co.**, at \$3.41 per ton for 800 tons of Pocahontas, and \$7.50 per ton for 553 tons of anthracite. Address Comr. F. G. Simmons, Department of Public Works, Milwaukee, Wis.

†**No. 556—Grand Rapids, Mich.**—This contract (Vol. 7, p. 709), which provides for furnishing the local Board of Education with its fuel requirements, aggregating between 7000 and 8000 tons of West Virginia coal, has been let as follows: **Bennett Fuel & Ice Co.**, **Kanawha**, \$2.94, and **New River**, \$3.80; **Breen & Halladay**, anthracite, \$8. Address Board of Education, Grand Rapids, Mich.

†**No. 729—Vicksburg, Miss.**—This contract (Vol. 7, pp. 916, 1984) which, provides for furnishing the Third District of the Mississippi River Commission with approximately 10,000 tons of coal was awarded to the **West Kentucky Coal Co.**, on June 18. The contract will run during the fiscal year ending June 30, 1916. Address Maj. Engrs., J. R. Slattery, U. S. Engrs. Office, Third Mississippi River Dist., Vicksburg, Miss.

**No. 766—South Bethlehem, Penn.**—This contract (Vol. 7, p. 956), which provides for furnishing coal to the local schools, has been awarded to the **Stahn Coal Co.** as follows: **Pea**, \$3.90; **nut**, \$5.75; **stove**, \$5.50. Other bids were: **South Bethlehem Coal Co.**, **pea** \$3.80, **nut** \$5.65, **stove** \$5.50; **Artificial Ice Co.**, **pea** \$4.05, **nut** \$5.70, **stove** \$5.55; **Sancon Supply Co.**, **pea** \$3.95, **nut** \$5.85, **stove** \$5.70. Address Secy. George E. Borman, Bd. of Edu., South Bethlehem, Penn.

**No. 674—New York, N. Y.**—Awards on this contract (Vol. 7, pp. 836, 876 and 956), with reference to the supply of coal for the schools in the Borough of Richmond, action upon which was deferred when the contracts for the other boroughs were awarded, have been made by the Board of Education. The contract was awarded to the **Richmond Ice Co.**, the only bidder. Address Supt. of School Supplies Patrick Jones, Board of Education, Park Ave. and 59th St.

†**No. 740—San Antonio, Tex.**—This contract (Vol. 7, pp. 917, 1084), which provides for furnishing the San Antonio School Board with its fuel requirements during the ensuing fiscal year, has been awarded to the **Mission Wood & Coal Co.** at \$5.25 for Wilburton nut and \$6.35 for Carona 6x3-in. fancy lump. Of the 10 bids received on this business this company was the lowest and best. Address Business Agt. Paul H. Scho'z, Bd. of Edu., Prudential Bldg., San Antonio, Tex.

**No. 678—New Brunswick, N. J.**—This contract (Vol. 7, pp. 876, 1048), which provides for furnishing the fuel requirements of the local Board of Education for the ensuing year has been awarded to **P. M. Welsh**, on the following basis per gross ton: **Egg and stove**, \$6.57; **pea**, \$4.99; **buckwheat**, \$3.51; **bituminous**, \$4.10. The coal is to be weighed on the city scales and delivered and stored as required. Address Secy. Morris Bauer, Supply Com. Bd. of Edu., New Brunswick, N. J.

**No. 598—New Orleans, La.**—This contract (Vol. 7, p. 794, Vol. 8, p. 40), which is said to cover the fuel requirements of the United Fruit Co., for the next two or three years, has been awarded to the **Warrior Black Creek Coal Co.**, and the **Pittsburgh Coal Co.**, each concern getting about one-half. It is stated that the Pittsburgh Co. has had this contract exclusively for sixteen years and had it not been for this the Alabama Co. would probably have obtained the entire contract. The coal will be shipped by the L. & N. R.R. Address Pur. Agt. United Fruit Co., New Orleans, La.

†**No. 730—Louisville, Ky.**—This contract (Vol. 7, p. 916), which provides for furnishing the local Board of Education with its fuel requirements during the fiscal year beginning July 1, has been awarded as follows: **Franklin Coal Co.**, 6277 tons of nut and slack, \$1.93; **Pittsburgh Coal Co.**, 1335 tons smokeless mine-run, \$3.15; **St. Bernard Mining Co.**, 386 tons lump, \$2.25. The contract was let on a heat-unit basis, but no test of the coal will be made unless it fails to give satisfaction, in which event the contract will be cancelled and coal bought in the open market. Address Business Dir. Samuel D. Jones, Administration Bldg., Eighth and Chestnut St., Louisville, Ky.

**No. 733—Providence, R. I.**—This contract (Vol. 7, p. 917), which provides for furnishing the Board of Control and Supply of the State of Rhode Island with coal during the ensuing year, has been awarded as follows: **H. N. Hartwell & Son, Inc.**, 11,000 tons of "Alpha Special" to Cranston, R. I., at an average of \$3.905; **Providence Coal Co.**, 900 tons of "New River" coal for the State Home and School at \$4.58, five tons for the Providence Armory and 20 tons for the Providence Armory at \$5 per ton; **M. L. Cobb**, 1000 tons of "George's Creek" coal for the State Sanatorium at \$4.32; **Logan Coal Co.**, 700 tons of Logan No. 2 to the Rhode Island State College at \$4.10. Address Secy. G. R. Parker, Bd. of Control and Supply, State House, Providence, R. I.

## Contract Notes

**Birmingham, Ala.**—The Alabama Co. has closed a contract for 25,000 tons of coal with the Southern Cotton Oil Co., for their mills in this section.

**Chile, S. A.**—The Chilean Government have issued a decree requiring a deposit of \$24.33 for every ton of coal taken by vessels under belligerent flags which sail direct to European ports.

**Warsaw, Ind.**—The Light & Water Department at this place consumes about 9000 tons of Cambridge (Ohio) coal which usually costs about \$2.55 per ton f.o.b. Warsaw. The business is done on competitive bids.

**Birmingham, Ala.**—The Southern Ry. has let contract for 500,000 tons of coal through Vice-president E. H. Chapman. Two hundred thousand tons will come from the Pratt Consolidated Coal Co., and the other 300,000 tons divided among the Stith Coal Co., Bryan Coal Co., Barney Coal Co. and others.

**St. Paul, Minn.**—The indications are that the Northern Coal & Dock Co. will be the successful bidders on this contract instead of the Peoples Coal & Ice Co. as previously noted (Vol. 7, p. 1128). The contract provides for furnishing about 17,000 tons of various grades of coal for the City Government.

**Brookhaven, Miss.**—The Light & Water Works Department at this place consumes about 2600 tons of Kentucky mine-run coal which usually costs about \$3 per ton. The company does not contract but the business is let on competitive bids. Address Supt. B. S. Purser, Light & Water Works Department, Brookhaven, Miss.

**Crawfordsville, Ind.**—The contract to supply 575 tons of coal to the Montgomery County institutions and buildings has been awarded to **Vaughn & Casey**. The bids were for 350 tons of mine-run at \$2.55, and 255 tons of mine-run at \$2.25. The contract calls for a total expenditure of \$1400.75, and in all there were four bidders.

**Buffalo, N. Y.**—The contract for furnishing the County Home and Hospital of this county with 2500 tons of slack coal has been awarded to **Spaulding & Spaulding**. For furnishing the County Penitentiary with 3600 tons of slack, C. A. & M. Kaiser were the successful bidders at \$1.85 per ton on cars. Both bids were practically the same.

**Philadelphia, Penn.**—Reports have reached here that the Argentine Republic is in the market for 50,000 tons of bituminous coal. The information comes from Buenos Aires that the purchase has been authorized by the home government. It is provided that the cost shall not be in excess of \$225,000, and the purchase is to be in charge of that government's ambassador at Washington.

**U. S. Production for the Half Year**—Output of bituminous coal in the United States for first six months of 1915 is estimated by the Geological Survey as between 180,000,000 and 190,000,000 short tons. The rate of production has been from 85% to 90% of the average for the previous year. This is considerably less than for the corresponding period in 1914, and is little, if any, greater than the output during the last half of that year. Production this year decreased after January, reached the low ebb in March and April, and is now on the increase. Output of anthracite has fallen from 3% to 5% below average for 1914.

**The Big Four R.R. Contract**—This road is reported to have contracted for 150,000 tons of Harlan County, Ky., coal for shipment during the year, beginning July 1. The contract was distributed among the Harlan Coal Co., the Southern Coal & Coke Co., the Bewley-Darst Coal Co., and the Reliance Coal Co., about a third of the order going to the first named company. This is said to be the first time that the Big Four has ever purchased coal from Eastern Kentucky mines on the Louisville & Nashville, most of their requirements having been obtained in West Virginia. Deliveries will be made at Ohio and Southern Michigan coaling points.